# CONSTRUCITON ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

Jacobson Avenue & Beehag Street,

Kyeemagh NSW 2216

E-PLAN-03 (September 2020) | Approved by Andrew Andreou Uncontrolled copy once printed



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### **1. INTRODUCTION**

### **1.1 PROJECT INFORMATION TABLE**

| Project information table      |                                 |  |                                     |                      |                             |            |  |
|--------------------------------|---------------------------------|--|-------------------------------------|----------------------|-----------------------------|------------|--|
| Project name                   | Kyeemagh                        | Kyeemagh Public School                               |                                     |                      |                             |            |  |
| Location                       | Jacobson /                      | Avenue & Beeha                                       | ag Stree                            | t, Kyeemagh NSW 2216 |                             |            |  |
| Client                         | NSW Depa                        | artment of Educa                                     | ation                               |                      |                             |            |  |
| Duration of contract           | 80 weeks                        |  |                                     |                      |                             |            |  |
| Taylor contact informati       | on                              |  |                                     |                      |                             |            |  |
| Company name                   | Taylor Cor                      | struction Group                                      | Pty Ltd                             |                      |                             |            |  |
| ABN                            | 25 067 428                      | 3 344  |                                     |                      |                             |            |  |
| Address                        | Level 13, 1                     | 57 Walker Stree                                      | et, North                           | Sydney 2060          |                             |            |  |
| Telephone and fax              | Ph.: 02 87                      | 36 9000 Fax: (                                       | 02 8736                             | 9090                 |                             |            |  |
| Position                       | Contact n                       | ame  |                                     |                      | Phone numbers               |            |  |
| Chief Operating Officer        | Clive Wick                      | ham  |                                     |                      | 02 8736 9000                |            |  |
| General Manager                | Tim Christi                     | ie   |                                     |                      | 02 8736 9000                |            |  |
| Construction Manager           | Doug Woo                        | ds   |                                     |                      | 0414 939 854                |            |  |
| Sr Project Manager             | Steve Ziaziaris                 |  |                                     |                      | 0413 182 641                |            |  |
| Site Manager (24 Hour Contact) | David Pereira 0415 241 170      |  |                                     | 0415 241 170         | 0                           |            |  |
| HSE Manager                    | Andrew Andreou                  |  |                                     |                      | 0404 492 614                |            |  |
| Safety Advisor                 | ТВС ТВС                         |  |                                     |                      |                             |            |  |
| Quality Manager                | Stephen Player     02 8736 9000 |  |                                     |                      |                             |            |  |
| Contract Administrator         | Scott Dobson 0414 984 567       |  |                                     |                      |                             |            |  |
| Site Engineer                  | Shanil Pra                      | sad  |                                     |                      | 0432 870 855                |            |  |
| Foreman/ leading hand          | TBC                             |  |                                     |                      | TBC                         |            |  |
| Cadet                          | Kurt Dessr                      | mann / Daniel Ta                                     | aylor                               |                      | 0431 205 832 / 0458 476 555 |            |  |
| Document control               | Name                            |  |                                     | Position             | Signature                   | Date       |  |
| Prepared by                    | Shanil Pra                      | sad  |                                     | Project Coordinator  | Ame.                        | 29.09.2020 |  |
| Reviewed by:                   | Steve Ziaz                      | iaris  |                                     | Sr Project Manager   | A                           | 29.09.2020 |  |
| Reviewed by:                   |                                 |  |                                     | /                    |                             |            |  |
| Revised by                     | Revision<br>#                   | Date   | Chang                               | ges made             |                             |            |  |
| Shanil Prasad                  | Draft                           | 17.07.20   | Initial                             | Draft                |                             |            |  |
| Shanil Prasad                  | 1                               | 30.07.20   | Revised as per comments             |                      |                             |            |  |
| Shanil Prasad                  | 2                               | 31.07.20   | Revised as per conditions table     |                      |                             |            |  |
| Shanil Prasad                  | 3                               | 17.09.20   | 20 Revised as per wolfpeak comments |                      |                             |            |  |
| Shanil Prasad                  | 4                               | 29.09.20 Revised as per additional wolfpeak comments |                                     |                      |                             |            |  |

### **1.2 PROJECT DESCRIPTION**

Kyeemagh is currently a K-2 Infant School and accommodates 61 students in 3 teaching spaces and will be demolished and replaced by a new K-6 school with 14 home bases, 3 special needs rooms and 2 special program rooms to accommodate 500 students. The new project includes new core 14 Facilities (Administration, COLA, Hall, and Library) together with 20 additional car parking spaces and a community garden.

The project will be constructed in two stages consisting of:

Stage 1 – Main Building New 2 storey teaching spaces and associated amenities; New Library; New administration Building; New playing space and Landscaping

Stage 2 – Demolition of all existing buildings; New COLA, New Hall, Car parking; New Multicourt playing space with Tiered Seating and landscaping.







### 1.3 PURPOSE OF THE PROJECT ENVIRONMENTAL MANAGEMENT PLAN

Taylor Construction Group Pty Ltd has a documented Quality, Health, Safety and Environmental (QSE) Management System. While the management systems are integrated, key documents such as the Project Environmental Management Plan (PEMP), the Project Safety Plan (WHSP) and the Project Management Plan (PMP, overarching plan with Quality provisions) are developed as separate documents to give each area a strong individual focus. The 'hierarchy of system documents' diagram below provides an overview of where the PEMP fits in the management system hierarchy.

This document is a key component of the integrated QSE Management System and sets out the environmental management strategy to be adopted on site by Taylor Construction Group Pty Ltd as the principal contractor for works undertaken on this project. The purpose of this document is to provide guidance on the essential environmental requirements on a project level and reference to other important management system processes and procedures. A Project Environmental Management Plan must be prepared for each project managed by Taylor Construction Group.

The project-specific Environmental Management Plan is to be read in accordance with Taylor Construction Management Manual, Site Management Plan and Site Safety Plan.

### **1.4 ORGANISATIONAL CHART**



### 2. HIERARCHY OF HSE SYSTEM DOCUMENTS



### **3. ENVIROMENTAL POLICY**

Taylor Construction Group has an Environmental Policy outlining our commitment to protection of the environment. This policy can be found in Appendix 2 of this document. A copy of the Environmental Policy is to be posted on the walls or notice board at the project site.

### 4. LEGAL AND OTHER REQUIREMENTS

The processes for identifying and keeping up to date with legal and other requirements are outlined in the **Legal and Other Requirements Procedure SE-P-01**.

An **Environmental Legal and Other Requirements Register E-R-01** has been prepared and is periodically updated to ensure that it reflects current legal requirements. This register identifies the key relevant legislation and guidelines and should be attached to this plan in appendix 7.

### 4.1 ENVIRONMENTAL FACTORS

| Factor              | Objectives  | Requirements  |
|---------------------|---|---|
| Noise manage        | ment*   |   |
| Noise/<br>vibration | Protect the amenity of nearby residents from noise/ vibration impacts resulting from activities associated with the proposed or existing development by ensuring that noise/ vibration levels meet statutory requirements and acceptable standards. | Identification of sources of noise/<br>vibration and estimates of project-wide<br>noise.<br>Ensure that noise and vibration levels<br>meet acceptable standards and that an<br>adequate level of service, safety and<br>public amenity is maintained. |
|                     |   | Propose measures to manage and/ or mitigate impacts.  |



| Water management*        |   |   |  |  |
|--------------------------|---|---|--|--|
| Surface<br>water quality |   | Details of site drainage, hydrocarbon<br>use, disposal of plant site waste<br>(including sewage), dewatering, and fate<br>of water used/ pumped.  |  |  |
|                          | Maintain or improve the quality of surface water to ensure that existing and potential uses, including ecosystem maintenance, are protected.  | Incorporate measures and/ or operating<br>procedures to ensure that storm water<br>run-off from the site reflects patterns,<br>volumes and quality that exist prior to<br>development, as far as reasonably<br>practicable. |  |  |
|                          |   | Drainage lines are to be naturalised as<br>much as possible and should enhance<br>the ecological values and recreational<br>opportunities.  |  |  |
|                          |   | Propose measures to manage and/ or<br>mitigate impacts.   |  |  |
|                          |   | Describe water requirements for any on-<br>site processing.   |  |  |
| Groundwater<br>quality   | Maintain or improve the quality of groundwater to ensure that existing and potential uses, including ecosystem maintenance, are protected.    | Incorporate measures and/ or operating procedures that will minimise the demand of the development on potable water supplies.   |  |  |
|                          |   | Ensure that no contaminated water,<br>including that containing sediments,<br>leaves the site.  |  |  |
|                          |   | Propose measures to manage and/ or<br>mitigate impacts.   |  |  |
| Air management           |   |   |  |  |
|                          | Ensure that notential air pollutants are contained and that activities do   | Identify sources of air pollution.  |  |  |
| Air                      | not impact on the natural environment.  | Propose measures to manage and/ or mitigate impacts.  |  |  |
| Particulates/            | Ensure that particulate/ dust emissions, both individually and cumulatively, meet appropriate criteria and do not cause an                    | Identification of sources of particulates/<br>dust and estimates of project-wide<br>emissions.  |  |  |
|                          | environmental or human health problem.  | Propose measures to manage and/ or mitigate impacts.  |  |  |
| Odour                    | Ensure that operations do not generate odour that causes  | Identification of sources of odour and estimates of project-wide emissions.   |  |  |
|                          | environmental nuisance.   | Propose measures to manage and/ or mitigate impacts.  |  |  |
| Waste management         |   |   |  |  |
| Solid/ liquid<br>waste   | Ensure that wastes are contained and isolated from land, ground and<br>surface water surrounds and treatment or collection does not result in | Identify sources of solid and liquid waste<br>and estimate the proposed amount<br>generated.  |  |  |
|                          | iong-term impacts on the natural environment.   | Propose measures to manage and/ or mitigate impacts.  |  |  |
| Contaminated             | land and water  |   |  |  |
| Land                     | Ensure that existing or proposed activities do not discharge to land.   | Identify activities that have the potential to discharge to land.   |  |  |
|                          |   | mitigate impacts.   |  |  |

| Surface<br>water          | Ensure that existing or proposed activities do not discharge to surface waters.   | Identify activities that have the potential<br>to discharge to surface waters.<br>Propose measures to manage and/ or<br>mitigate impacts.              |
|---------------------------|---|--|
| Groundwater               | Ensure that existing or proposed activities do not discharge to groundwater.  | Identify activities that have the potential<br>to discharge to groundwater.<br>Propose measures to manage and/ or<br>mitigate impacts                  |
| Hazardous ma              | terials management  |  |
| Scheduled<br>wastes       | Ensure scheduled wastes are specially treated for their destruction.  | Identify scheduled wastes and describe<br>treatment of their destruction.<br>Propose measures to manage and/ or<br>mitigate impacts.                   |
| Resource<br>storage       | Ensure that chemicals and other potentially harmful resources used in the manufacturing process are stored and disposed of correctly. | Describe the use and management of<br>chemicals and other potentially harmful<br>resources.<br>Propose measures to manage and/ or<br>mitigate impacts. |
| Compressed/<br>liquid gas | Ensure the suitable storage of compressed/ liquid gas.  | Describe the use and management of<br>compressed/ liquid gas.<br>Propose measures to manage and/ or<br>mitigate impacts.                               |

### 4.2 SPECIFIC UNDERTAKING FROM FORMAL ENVIRONMENTAL IMPACT ASSESSMENT

- Requirements required within the Project Remediation Action Plan (Ref: 80818157\_R002\_Kyeemaghl nfants RAP Rev0)
- Requirements required by the Conditions of Development Consent for State Significant Development Application No SSD Project 9391

### 4.3 DEVELOPMENT CONSENT CONDITIONS

Consent working hours are:

| Monday to Friday            | 7.00 am | 6.00 pm |
|-----------------------------|---------|---------|
| Saturdays                   | 8.00 am | 1.00 pm |
| Sundays and public holidays | NO WORK |         |

Works may be undertaken outside these hours in accordance with conditions C4 where:

- by the Police or a Public Authority for the delivery of vehicles, plant, or materials; or
- in an emergency to avoid the loss of life, damage to property or to prevent environment harem; or
- where the works are inaudible at the nearest sensitive receivers; or
- where a variation is approved in advance in writing by the Planning Secretary or his nominee if appropriate justification is provided for the works.

Rock breaking, rock hammering, sheet piling, pile driving, and similar activities may only be carried out between the following hours:

- Monday to Friday 9.00 am to 12.00 pm
- Monday to Friday 2.00 am to 5.00 pm
- Saturdays 9.00 am to 12.00 pm.

### 4.4 DEVELOPMENT CONSENT CONDITIONS

| Condition | Description   | Page Number  |
|-----------|---|--|
| B13       | CEMP Requirements   |  |
| B13       | (a)Details of:<br>(i)hours of work;<br>(ii)24-hour contact details of site manager;   | (i)Section 4.3<br>Page 10<br>(ii) Project<br>Information Table<br>Page 4         |
| B13       | (a)Details of:<br>(iii)management of dust and odour to protect the amenity of the neighbourhood;  | Section 4.1<br>Page 9<br>Section 11.3.7<br>Page 32<br>Section 11.3.10<br>Page 34 |
| B13       | (a)Details of:<br>(iv)stormwater control and discharge;   | Section 11.3<br>Page 29 & 30<br>Appendix 11<br>CSWMSP                            |
| B13       | (a)Details of:<br>(v)measures to ensure that sediment and other materials are not tracked onto the roadway by<br>vehicles leaving the site;                                     | Section 11.3.2<br>Page 29 & 30<br>Appendix 11<br>Section 6<br>CSWMSP             |
| B13       | (a)Details of:<br>(vi)groundwater management plan including measures to prevent groundwater contamination;  | Section 11.3.6<br>Page 32<br>Appendix 6<br>Page 6<br>Appendix 11<br>CSWMSP       |
| B13       | Air Quality Management  | Section 11.3.7<br>Page 32 & 33   |
| B13       | (a)Details of:<br>(vii)external lighting in compliance with AS 4282-2019 Control of the obtrusive effects of<br>outdoor lighting;   | Section 11.3.14<br>Page 35   |
| B13       | (a)Details of:<br>(viii)community consultation and complaints handling;   | Section 10.2<br>Page 28  |
| B13       | (b)Construction Traffic and Pedestrian Management Sub-Plan (see condition B23);   | Appendix 8   |
| B13       | (c)Construction Noise and Vibration Management Sub-Plan (see condition B24);  | Appendix 9   |
| B13       | (d)Construction Waste Management Sub-Plan (see condition B25);  | Appendix 10  |
| B13       | (e)Construction Soil and Water Management Sub-Plan (see condition B26);   | Appendix 11  |
| B13       | (f) Flood Emergency Response Sub-Plan (see condition B18);  | Appendix 14  |
| B13       | (f)an unexpected finds protocol for contamination and associated communications procedure as required by condition B18;   | Section 12.3<br>Page 36<br>Appendix 12<br>RAP<br>AMP                             |
| B13       | (g)an unexpected finds protocol for Aboriginal and non-Aboriginal heritage and associated communications procedure; and   | Section 11.3.13<br>Page 34 & 35  |
| B13       | (h)waste classification (for materials to be removed) and validation (for materials to remain) be<br>undertaken to confirm the contamination status in these areas of the site. | Appendix 10<br>CWMP  |

| Condition | Description  | Page Number           |
|-----------|--|-----------------------|
| B17       | Erosion & Settlement Control Installation<br>Prior to the commencement of construction, the Applicant must install erosion and sediment<br>controls on the site to manage wet weather events.  | Appendix 11<br>CSWMSP |
| B17       | Erosion & Settlement Control Installation<br>Prior to the commencement of construction, erosion and sediment controls must be installed<br>and maintained, as a minimum, in accordance with the publication Managing Urban<br>Stormwater: Soils & Construction (4th edition, Landcom 2004) commonly referred to as the<br>'Blue Book'. | Appendix 11<br>CSWMSP |

### 5. ENVIRONMENTAL RISK IDENTIFICATION AND ASSESSMENT

Standard ISO 14001 requires that environmental aspects relating to the organisation's activities, products and services are identified and those aspects that can have a significant impact on the environment, determined. At Taylor Construction Group, the environmental aspects relating to general construction activities have been identified through a risk assessment workshop attended by key project and site managers and an environmental consultant. The aspects, impacts, risk assessment outcomes and generic controls are documented in the HSE Risk Register HSE-R-01. Detailed requirements for risk assessments (environmental and OHS) are described in Risk Assessment Procedure SE-OP-03.

### 5.1 ENVIRONMENTAL RISK ASSESSMENT

The methodology for risk assessments are based on the requirements described AS/NZS 4360 (Risk Assessment) and HB203 (Environmental Risk Assessment).

Taylor Construction procedure requires an initial Project Risk Assessment to be undertaken at the commencement of each project. The Risk Assessment is to be conducted in the form of a workshop and is to include the project/ site manager, HSE manager, key members of the project team and, to the extent required, key subcontractors, and is to be recorded on form **HSE-R-01 HSE Risk Register**.

The HSE Risk Register is to be developed to address both legal and other requirements covered in this plan and is to be referenced to implement systems and work practices that will eliminate or minimize the likelihood of injury, illness or incident occurring.

When developing the Project HSE Risk Register, members of the workshop will to take into consideration available information which is relevant to the works and is contained in any published copies of the HSE Acts; WHS regulation; Australian/ National Standards; codes of practice; available internal and external industry bulletins/ alerts and industry reports to identify and document any known or foreseeable hazards associated with that tasks.

The completed Environmental Risk Assessment can be found in Appendix 13 of the project HSE Plan (WHS-PLAN-02).

#### **References:**

SE-P-03 Risk Assessment Procedure

### 6. OBJECTIVES AND TARGETS

Objectives and targets are set at a corporate level. They are monitored and measured to ensure that Taylor Construction Group continually improves our environmental performance. To ensure that we meet our corporate objectives and targets, key performance indicators (KPIs) are set at a project level and reported to management monthly.

| Objectives  | Targets  |
|---|--|
| Effective site environmental controls.  | Achieve alignment with Taylors and Client expectations in relation to best practice control measures.<br>Fulfil environmental obligations. |
| Increase amount of waste being recycled, reduce waste cost.                       | Eighty-five per cent (85%) of waste to be recycled.  |
|   | Zero major environmental incidents and no breaches.  |
|   | Zero infringement notices.   |
| Environmental performance.  | All environmental spills to be reported to Taylor Construction within 2 hours of occurrence.   |
|   | Environmental inspection competed weekly and documented in <b>SE-F-02 HSE Inspection Checklist</b> (more often if required).               |
| Reduce the amount of environmental impact our operations have on the environment. | Environmental issues identified and controlled prior to causing negative impacts on the project or on the environment.                     |
| Effective implementation of the environmental system.                             | Eighty per cent (80%) or better internal audit results.<br>Full compliance with planning approval requirements.                            |
| Community issues carefully handled.   | Zero valid complaints. All complaints reported to Taylor's representative.   |

### 7. ROLES AND RESPONSIBILITIES

All persons working for and on behalf of Taylor Construction Group have responsibilities in relation to ensuring that environmental issues are appropriately managed. Generic WHS and environmental responsibilities are outlined in the **Roles, Responsibilities and Authorities Procedure QSE-P-06.** 

**Subcontractors.** The subcontractor shall be required to comply with all applicable work health, safety and environmental legislation, including any additional Taylor's requirements, whilst engaged on a Taylor-managed project. The subcontractor shall be responsible to communicate any relevant environmental information to their personnel (workers) who are engaged in carrying out the work or providing material to the job site, including any secondary subcontractors or sole traders engaged by them and approved by Taylor Construction.

#### Subcontractor's minimal environmental requirements:

- Has the subcontractor identified in the SWMS environmental hazards and controls in relation to the work task (where required), i.e. refuelling plant and equipment on site, nuisance dust controls, nuisance noise, waste management (off-cuts), rubbish, concrete wash-out?
- Have hazardous substances or dangerous goods to be used on site by the subcontractor been identified? Note: the subcontractor will need to provide copies of relevant Safety Data Sheets (SDS) for all materials and/ or hazardous substances or dangerous goods to be used on site and note reference to training of employees in the SDS prior to first use and controls listed in the SWMS.

**Taylor Construction personnel.** For this project, the key roles and specific responsibilities of our managers, supervisors and site personnel regarding environmental management on site are outlined below. Project-related management and staff are required to sign off that they have read and understood their responsibilities once the plan has been approved for the project.

### 7.1 CHIEF OPERATING OFFICER

The chief operating officer is responsible for:

- Defining Taylor Construction workplace health and safety policies and setting their objectives;
- Providing leadership that promotes and maintains Taylor's determination to continually improve its performance in workplace health and safety;
- Demonstrating genuine interest in workplace health and safety; supporting all project managers to encourage incident prevention;
- Acquiring and keeping up-to-date knowledge of workplace health and safety matters;
- Gaining an understanding of the operations of the business and the hazards and risks involved;
- Ensuring information regarding incidents, hazards and risks is received responded to in a timely way;
- Ensuring the PCBU has, and implements, processes for complying with any legal duty or obligation;
- Being fully briefed of the safety status of all current Taylor Construction projects;
- Setting targets and allocating priorities for workplace health and safety matters for all Taylor Construction staff;
- Leading by example in all matters concerning workplace health and safety.

Name: Clive Wickham

Signed:

### 7.2 GENERAL MANAGER

#### The general manager is responsible for:

- Demonstrating genuine interest in workplace health and safety; supporting all project and site managers to encourage incident prevention;
- Assessing and allocating appropriate resources and equipment within the company for the effective implementation of the Workplace Health and Safety Management System and the management of WHS related hazard/ risks relevant to the construction projects;
- Being fully briefed of the HSE status of all current Taylor Construction projects;
- Assisting in the development and implementation of continuous improvement processes for workplace health and safety.

#### Specific roles:

- Provide visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken. Participate in health and safety meetings and consultation regarding workplace health and safety matters;
- Consider workplace health and safety matters with other senior members of the organisation as part of normal business
  practice and incorporate WHS into meeting agendas;
- Allow appropriate budget allocations for HSE management and improvement;
- Encourage and promote safety within the company by participating and openly consulting with employees in respect to their health and safety.

Name: Tim Christie

Signed:

### 7.3 CONSTRUCTION MANAGER

The construction manager is responsible for:

- Demonstrating genuine interest in workplace health and safety; supporting all the project/ site managers to encourage incident prevention;
- Assessing and allocating appropriate resources and equipment within the company for the effective implementation of the workplace health and safety management system and the management of WHS related hazard/ risks relevant to the construction projects;
- Assisting in the development and implementation of continuous improvement processes for workplace health and safety;
- Checking that legislative obligations are met, and that Taylor Construction OHS Policy is effectively implemented throughout all company construction projects;
- Ensuring compliance with Taylor Construction accredited HSE systems is maintained and implemented across all Taylor managed projects.

#### Specific roles:

- Provide leadership in the development of project teams to ensure the fostering of the business culture and approach to doing business with our clients, consultants and subcontractors;
- Attend sites on a regular basis to ensure compliance with workplace health, safety, quality and programming requirements of both the head contract and the company' systems;
- Provide visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken, and by participating in safety and health meetings and consultation regarding WHS matters;
- Encourage and promote safety within the company by participating and openly consulting with employees in respect to their health and safety;
- Assist the HSE manager in allocating competent personnel to coordinate workplace health and safety within the company;
- Ensure that project/ site managers have developed and implemented systems, which will ensure subcontractors/ suppliers engaged by the company comply with the health and safety management systems and the relevant WHS legislation;
- Consider workplace health and safety matters with other senior members of the organisation as part of normal business
  practice and incorporate WHS into meeting agendas;
- Support the HSE manager in ensuring project/ site managers have developed and implemented systems which will ensure subcontractors and suppliers engaged by the company comply with the health and safety management systems and the relevant workplace health and safety legislation;
- Respond to non-conformance by any member of the company who fails to discharge their duties as set by the Responsibility Statement and actively participate in dispute resolution where required;
- Allow appropriate budget allocations for HSE management and improvement;
- Facilitate a systematic approach of workplace health and safety to the identification, assessment, control and monitoring of related risks that may arise through both normal and adverse operating conditions.

#### Name: Doug Woods

Signed:

### 7.4 PROJECT MANAGERS

#### The project managers are responsible for:

- Providing visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken, and by participating in health and safety meetings and consultation regarding WHS matters;
- Consulting with Taylor's construction manager and the HSE manager to ensure enough resources are allocated to the project to comply with legislative and Taylor's HSE requirements;
- Facilitating the process to ensure the project team and the HSE manager are consulted and participate in the development of the project specific HSE Risk Assessment. This is to be done prior to such activities commencing;
- Ensuring compliance with safety legislation, regulations, licensing conditions and authorities requirements relevant to all construction work;
- Ensuring adequate Taylor's site supervision is maintained throughout all hours of operation and those assigned with supervisory roles are competent and authorised to do so (e.g. PM, SM, leading hand or foreman);
- Developing, implementing and reviewing, in consultation with the site manager and HSE manager, the specific site safety plans;
- Identifying, planning and ensuring all safety training required for personnel is undertaken to support project needs, whether on or off-site. This task may be done in liaison with the HSE manager;
- Ensuring provisions are made for having a trained first aider present on site throughout all working hours;
- Ensuring that potential subcontractors have been issued with a copy of the Contractor's HSE Requirements QSE-F-15.23 (letter template) at tender stage and ensuring, upon successful awarding of contract, that required WHS documents are made available by the subcontractor and reviewed by the project team prior to the subcontractor commencing;
- Supporting the site manager in the management of employee, subcontractor and supplier's performance in complying with Taylor's WHS Plan and the site-specific rules for the project;
- Selecting appropriate subcontractors, giving due regard to their ability to comply with legislative and Taylor's WHS requirements;
- Ensuring incidents are investigated and appropriate action taken as required by Taylor's site Safety Plan requirements in consultation with the HSE manager;
- Ensuring safety Notices issued and/ or visits made to the project by industrial representatives and/ or SafeWork NSW are reported to both managing director and HSE manager;
- Assisting the HSE manager when employees have been injured to evaluate suitable duties and encourage employee's early rehabilitation;
- Developing and implementing site evacuation and emergency procedures and overseeing at least one spontaneous evacuation drill every six months and assessing the results of that drill;
- Demonstrating an attitude to stimulating a high level of safety awareness at all times, leading by example and encouragement with a view to continuous improvement;
- The project manager is required to carry out at least one formal site safety inspection per month on every site under their control;
- Reporting back to Taylor's senior managers the project HSE incidents, external authority visits and/ or Notices issued.
- Ensure that all employees, contractors (and their subcontractors) are made aware of, and are instructed to comply with the, the conditions of this consent relevant to activities they carry out in respect of the development.
- Notification of any incident or non-conformances are provided to the superintendent for notification to the Planning Secretary, within the requirements set out in the SSD.

Name: Steve Ziaziaris

Signed:

### 7.5 HSE MANAGER

#### The HSE manager is responsible for:

- Overseeing the implementation of Taylor's Health, Safety and Environmental Management System throughout all Taylor Construction activities;
- Ensuring the system is maintained and continuously improved;
- Setting targets and allocating priorities within the framework of the Safety Management System;
- Safeguarding compliance and maintenance of the company's third-party accreditations;
- Planning and delivering training in safety management and/ or arranging for the appropriate internal or external trainers/ facilitators to conduct the training;
- Researching, developing and implementing new procedures and forms, and updating the manual as required;
- Compiling safety data from weekly and monthly project reports;
- Reviewing, analysing and reporting on safety performance to Taylor's managing director, sector managers and any
  party as arranged by the managing director;
- Ensuring compliance with safety legislation, regulations, licensing conditions and authorities requirements;
- Monitoring construction industry safety technology and management practices;
- Ensuring Taylor's workplace health and safety is reviewed on a regular basis (i.e. arranging for internal and external audits);
- Reviewing internal and external (independent) audit reports and, in consultation with the directors and the project manager, develop appropriate Action Plans if necessary;
- Conducting or delegating internal workplace health and safety audits;
- Workers compensation and return-to-work duties, including notification, recording and first point of contact. These duties
  may be delegated to appropriate personnel;
- Identifying hazards, assessing risks and selecting risk control measures for site-specific situations;
- When required, acting as the lead investigator in workplace incidents/ accidents, liaise with external authorities in managing them and report back to managing director and/ or sector managers on outcomes of investigations;
- Acquiring and disseminating information associated with construction industry safety;
- Ensuring HSE policies and procedures are implemented on all projects and that a specific site Safety Plan is prepared and implemented for all projects;
- Reviewing all project's health and safety targets; keeping abreast of the changing requirements and techniques;
- At the tender stage, reviewing nominated subcontractor's ability to comply with Taylor's site-specific rules and procedures as well as their own SWMS;
- At the tender stage, ensuring that valid certificates of currency (for workers compensation) are provided by all subcontractors prior to that subcontractor or his workers commencing on any Taylor's site.

Name: Andrew Andreou

Signed:

### 7.6 PROJECT SAFETY ADVISOR

The project safety advisor is responsible for:

- Providing visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken, and by participating in safety and health meetings and consultation regarding WHS matters;
- Assisting the HSE manager and project teams in implementing Taylor's health, safety and environmental procedures, policies and project systems in line with best practice and the relevant statutory legislation;
- Reporting any serious incident or near miss immediately to the HSE manager;
- Safeguarding compliance and maintenance of the company's third-party accreditations;
- Assisting project teams and subcontractors in meeting their workplace health and safety obligations;
- Ensuring compliance to this project Workplace Health and Safety Plan;
- Monitoring subcontractor's compliance with the site Safety Plan, and subcontractor compliance to their Safe Work Method Statements by conducting regular task observation/ audits;
- Where requested, assisting the project/ site manager with completing site inductions, project reports and daily diary entries;
- Undertaking workplace inspections to identify hazards and unsafe/ unhealthy workplace conditions and practices;
- Assisting the site manager/ area foreman in the management and supervision of subcontractors;
- Reporting incidents and/ or identified hazards and appropriate risk control measures to line managers;
- Assisting the project team in obtaining and auditing subcontractor's workplace health and safety documentation;
- Ensuring all workplace health and safety documents are maintained and filed in accordance with Taylor Construction filing requirements;
- Coordinating or conducting site toolbox talks and ensure subcontractors regularly consult with their employees on matters relating to HSE;
- Following up on project-based risk assessments to ensure they are being followed and updated as necessary;
- Liaising with the project/ site manager to implement controls on hazards identified;
- Completing Safe Work Method Statement checklists for the site (task observation);
- Collating completed contractor forms and checklists;
- Acting site safety representative for the site (unless another person has been elected to perform this role as per the consultation statement S-F-04 WHS Consultation Statement);
- Other HSE and/ or CW's issues or activities that may require their attention.

If no safety advisor is allocated to the project, the roles and responsibilities mentioned above are to be allocated to alternative Taylor Construction persons engaged on the project who are competent or have been suitably trained to full fill these duties.

Name:

Signed:

### 7.7 SITE MANAGERS

#### The site managers are responsible for:

- Providing visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken, and by participating in safety and health meetings and consultation regarding WHS matters;
- Unless otherwise nominated, undertaking the role of site safety advisor for safety issues and control of the site. This role is supported by the project manager and the HSE manager;
- Implementing, through consultation with the project manager, the Site Safety Plan in accordance with WHS legislation, regulations, codes of practice, Australian Standards and/ or other statutory requirements;
- Ensuring the project's site workers comply with the Taylor Construction project Safety Plan;
- Ensuring all workers and, if required, visitors, are site-specific inducted and aware of any compliance obligations;
- Ensuring site security and site-specific signage is fixed to key access, internal and perimeter areas including 24-hour project contact details, attendance details for visitors, PPE requirements and construction zone signage;
- Implementing and undertaking formal and proactive consultation measures between the project team and subcontractors;
- Ensuring items identified by safety or systems audits are rectified within specified timelines in consultation with the project manager, HSE manager and subcontractors;
- Consulting with all persons on safety issues, including changes to the workplace, and encouraging the involvement of all personnel in achieving a safe and healthy site;
- Managing any site-specific workplace health and safety issue in the first instance and discussing these with the project manager and/ or HSE manager as required;
- Developing, planning, implementing and reviewing site-specific emergency and evacuation procedures;
- Monitoring subcontractor's compliance with the site Safety Plan, in particular subcontractor's compliance to their Safe Work Method Statements, by conducting regular task observation/ audits;
- Identifying any hazards and assessing any risks on site and implementing risk control measures;
- Prior to commencement, reviewing subcontractor's WHS Plan/ SWMS with regard to the specific site task using forms SE-F-14 Safe Work Method Statement Review Form and SE-F-14.1 Contractor's HSE Plan Review;
- Ensuring that requirements contained in SE-F-14 Safe Work Method Statement Review Form and SE-F-14.1 Contractor's HSE Plan Review are met prior to works commencing on site;
- Periodically throughout the contractor's works, reviewing compliance with SWMS and sign off on the SWMS Checklist;
- Leading or participating in formal site safety inspections weekly and record results using SE-F-02 HSE Inspection Checklist. Daily informal inspections should be noted in site diary;
- Utilizing experience and judgement to shut down and/ or evacuate any part of the site if a major health and safety risk occurs;
- Investigating, recording and reporting incidents and initiating corrective and action plans by relevant personnel. Reporting any serious incident immediately to the project manager and HSE manager;
- Providing support and assisting with rehabilitation of employees who have been injured at work by encouraging their early return to normality through work-based rehabilitation programs;
- Completing site diaries as per project administration requirements and forwarding that data to the HSE manager;
- Reviewing, coordinating and implementing emergency evacuation procedures and participating in drills at specified intervals (quarterly);
- Ensuring that all plant and equipment used on Taylor Construction sites are safe, correctly maintained and that the operator is correctly licensed or qualified for manipulating that equipment;
- Safeguarding compliance and maintenance of the company's third-party accreditations.

#### Name: David Pereira

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### 7.8 SITE FOREMAN

#### The site foreman is responsible for:

- Implementing, through consultation with the project manager, the Site Safety Plan in accordance with WHS legislation, regulations, codes of practice, Australian Standards and/ or other statutory requirements;
- Assisting with the review and monitoring of subcontractor's Safe Work Method Statements (SWMS) in consultation with the senior site manager and site safety officer. Ensure that all requirements of forms SE-F-14.1 Contractor's HSE Plan Review and SE-F-14 Safe Work Method Statement Review Form are met and implemented on site;
- Ensuring no work is undertaken on site until the relevant SWMS has been reviewed and signed off in accordance with form SE-F-14 Safe Work Method Statement Review Form;
- Monitoring subcontractor's compliance with the site Safety Plan and, in particular, subcontractor's compliance to their Safe Work Method Statements by conducting regular task observation /audits;
- Ensuring periodic reviews for compliance/ suitability of SWMS relevant to works under their control;
- Ensuring that site personnel comply with the Taylor Construction project Safety Plan;
- Ensuring all workers and, if required, visitors, are site-inducted and aware of any compliance obligations;
- Ensuring that site security and site-specific signage is fixed to key access internal and perimeter areas, including 24hour project contact details, and that they are legible and current;
- Assisting with implementing and undertaking formal and proactive consultation measures between the project team and subcontractors;
- Ensuring items identified by safety or system audits are rectified within specified timelines in consultation with the project manager, site manager, site safety advisor and subcontractors;
- Consulting with all persons on safety issues, including changes to the workplace, and encouraging the involvement of all personnel in achieving a safe and healthy site;
- First response in managing site-specific workplace health and safety issues in the first instance, and discussing these with the project manager, site manager and/ or site safety advisor as required;
- Assisting with developing, planning, implementing and reviewing site-specific emergency and evacuation procedures;
- Monitoring subcontractor's compliance with the site Safety Plan, in particular subcontractor compliance to their Safe Work Method Statements;
- Identifying any hazards and assessing any risks on site and implementing risk control measures;
- Leading or participating in formal site safety inspections weekly using form SE-F-02 HSE Inspection Checklist. Note: informal inspections should be noted in site diary;
- In consultation with the project manager and the senior site manager, and utilizing experience and judgement, shut down and/ or evacuate any part of the site if a major health and safety risk occurs;
- Investigating, recording and reporting incidents, and initiating corrective action plans by relevant personnel. Reporting any serious incident immediately to the project manager, the senior site manager and the HSE manager;
- Monitoring the use of personal protective equipment (PPE) by site personnel;
- Completing site diaries as per project administration requirements;
- Assisting with reviewing, coordinating and implementing emergency evacuation procedures and participating in drills at specified intervals, minimum every six months;
- Ensuring that all plant and equipment used on Taylor Construction sites are safe, correctly maintained and that the operator is correctly licensed or qualified for operating that equipment;
- Assisting with archiving project safety records and information.

Name:

Signed:

### 7.9 CONTRACT ADMINISTRATOR/ SITE ENGINEER

#### The contract administrator and site engineer's responsibilities are:

- Support the project and site management in the management of employee, subcontractor and suppliers' performance in complying with Taylor Construction WHS and the site-specific rules for the project;
- Assist the project/ site manager to ensure the site Safety Plans and associated documentation, including standard forms, procedures and templates, remain current and up to date;
- Where required, assist the project and site manager with site inductions;
- Include in subcontract agreement the requirement for subcontractors to carry out their works in accordance with the company's or subcontractor's approved Safety Plans;
- Forward to subcontractors a copy of HSE subcontractor requirement Contractor's HSE Requirements QSE-F-15.23 (letter template), ensuring this is completed and returned by subcontractor prior to commencing;
- At the tender interview stage, discuss with the subcontractors their obligation for managing HSE requirements by issuing to them relevant sections of the tender interview form and ensuring this is completed by subcontractor prior to commencing on site;
- Request and obtain from the subcontractor copies of their Quality and Safety Plans;
- Using returned form to assess subcontractor's abilities to comply with HSE requirements and make recommendations to the project/ site manager;
- Request and obtain from the subcontractor copies of their Workers Compensation and Public Liability Certificates of Currency, ensuring they are current and that copies are available on site;
- Ensure that all completed copies of form Contractor's HSE Requirements QSE-F-15.23 (letter template) are returned and filed in the project files and a copy uploaded onto U-drive;
- Ensure that the latest copies of Project Plans and HSE Risk Assessments are uploaded onto Project Centre, or preferred data control system used, and engaged subcontractors have access to these;
- Assist the project, site and safety managers in conducting project audits, reporting on safety compliance and maintaining safety records;
- Ensure all external complaints/ incidents are recorded on SE-F-21 Incident Report Form and filed in the External Complaints Register located in the OHS folder in the U-drive;
- Assist project and site management in the general administration of HSE where requested.

Name: Scott Dobson

Name: Shanil Prasad

Signed:

Date:

Signed:

### 7.10 BUILDING CADET

The building cadet health, safety and environmental responsibilities are:

- Provide general assistance to management on an assigned project;
- Provide administrative assistance in managing site safety, quality assurance and environmental management systems;
- Maintain project registers and records;
- Provide assistance with site contract administration and tendering;
- Manage project document control and provide design management assistance;
- Assist with on-site supervision;
- Assist the project/ site manager to ensure the site Safety Plans and associated documentation, including standard forms, procedures and templates, remain current and up to date;
- Forward to subcontractors a copy of HSE subcontractor requirement form QSE-F-15.23 Contractor's HSE Requirements (letter template), ensuring this is completed and returned by subcontractor prior to works commencing;
- Assist the project, site and safety managers with conducting project audits, reporting on safety compliance and maintaining safety records;
- Where required, assist the project and site managers with conducting site inductions;
- Fulfil responsibilities as outlined in the 'Taylor Cadet Program Guidelines', including undertaking an approved course of study at an Australian University;
- Assist project and site management in the general administration of HSE where requested;
- Monitor the use of personal protective equipment (PPE) by site personnel;
- Complete site diaries as per project administration requirements.

Name:

Signed:

### 7.11 FIRST AID OFFICERS

It is the job of the trained first aider to provide initial treatment to injured or ill employees, which is consistent with first aider's level of training and competency. Where the treatment required is beyond a first aider's level of competency, they should recommend that the employee seek immediate medical assistance.

The nominated site first aid officers shall possess the required level of competency (Senior First Aid Certificate or Occupational First Aid Certificate) and they shall be responsible for:

- I. Providing first aid assistance to persons ill or injured on site;
- II. Recording all such assistance provided;
- III. Liaising with the site manager and/ or site foreman to achieve first aid obligations.

#### First aid officer records:

The nominated first aider shall be relied upon to exercise a common sense-approach in determining what type of injuries require a first aid report to be completed. First aid/ incident reports shall only be completed for injuries or illnesses for which first aid assistance was sorted **immediately** following an event. Employees, including subcontractor's, seeking to report an injury or incident for which first aid assistance was not initially sort **shall not** be provided with a copy of the report unless this has been authorised by the site/ project manager and/ or Taylor Construction HSE manager.

Some typical injuries that may require reporting are:

- All injuries requiring off-site medical treatment;
- Impact injuries;
- Head injuries;
- Musculoskeletal injuries;
- Open wounds (cuts);
- Eye injuries.

The first aid officers shall also be responsible for the regular maintenance and replenishment of the first aid kits and equipment.

| Name: | Signed: | Date: |
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| Name: | Signed: | Date: |
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### 7.12 PCBU AND WORKERS

#### PCBU and workers are responsible for:

- Attending Taylor Construction site-specific induction prior to commencing work on site;
- Taking reasonable care for their individual health and safety and that of others on site, including members of the public;
- Familiarising themselves and adhering to Taylor Construction corporate policies;
- Performing only those works in which they possess the required competencies for, or have been suitably trained to perform;
- Taking corrective actions to eliminate hazards within the workplace and /or reporting those hazards they cannot correct;
- Reporting all injuries to a first aid officer or supervisor;
- Cooperating with Taylor Construction management in all requirements imposed in the interest of health, safety and welfare;
- Never intentionally or recklessly interfering with, misusing or removing any items and/ or equipment provided in the interest of health and safety;
- Complying with all site safety instructions and abiding by the procedures and work practices identified in the Workplace Heath Safety Project Plans and/ or as directed or informed by the site manager/ foreman;
- Complying with all relevant workplace health and safety legislation, standards and codes of practice;
- Reporting promptly to a site manager/ foreman any unsafe conditions, practices or defects discovered in any control
  measures, including personal protective equipment;
- Maintaining safe work practices when working with, or near, hazardous substances, so that their own health and safety, and the health and safety of those around them, is maintained;
- Using personal protective equipment (PPE) as required. The equipment should be kept clean and maintained in an appropriate manner;
- Practicing a high-standard personal hygiene in and around all amenity areas such as lunch, change and toilet facilities by washing thoroughly and removing all protective clothing before eating, drinking and smoking.

### **References:**

Roles, Responsibilities and Authorities Procedure QSE-P-06

### 8. INDUCTION

Taylor Construction employees, including those workers engaged by or working on behalf of the subcontractors, are required to be site-inducted prior to commencing work on the site. General environmental awareness and specific environmental requirements of this PEMP must be incorporated into the site-specific induction as required.

As a minimum, inductions must include the following environmental information:

- Community issues;
- Hours of operation;
- Noise and vibration;
- Dust management;
- Traffic access;
- Washing requirements for construction plant and equipment;
- Storage and handling of fuels, oils and other chemicals;
- Waste management: recycling, disposal, litter;
- Soil and water issues: controls, tracking of mud off-site.

Where there are significant environmental issues identified for the project, these must be incorporated into the site-specific induction. These may include but shall not be limited to (where required):

- Environmentally sensitive areas of the site (specify details in this section);
- Contaminated or Acid Sulphate soils;
- Endangered flora and fauna;
- Environmental controls and management;
- Noise emissions;
- Plant emissions;
- Archaeology and heritage management.

#### References:

- SE-F-11 Site Induction Form and Mandatory Safety Requirements
- SE-F-11a Induction Register

### 9. TRAINING AND COMPETENCY

All persons undertaking work on the project (employees and subcontractors) must be trained and competent to carry out their work. This includes undertaking tasks in an environmentally sound manner.

Subcontractors shall be responsible to ensure that Taylor Construction Environmental Risk Management, as prescribed in chapter 11.3 of this plan, are adopted and controls, as contained in Taylor's **HSE-R-01 HSE Risk Register**, are implemented when developing their systems of work.

The subcontractor shall be responsible to consult and train workers under their management in agreed environmental system. Evidence of appropriate training shall be made available by the subcontractor to Taylor Construction upon request by a Taylor nominated representative.

The project/ site management, along with relevant members of the project team, must be made aware of the requirements of the Taylor Environmental Management System and shall be required to attend Environmental Awareness and Due Diligence training sessions when organised by the company.

#### **References:**

- QSE-P-19 Training, Competency and Awareness Procedure
- WHS-PLAN-02 Project Workplace Health and Safety Plan (PWHSP)

### **10. COMMUNICATION**

The requirements for internal and external communication are outlined in the QSE Management System Manual. The following provides essential information in relation to environmental communication on projects.

### **10.1 INTERNAL COMMUNICATIONS**

Essential information relating to project environmental management will be communicated through toolbox talks and inductions.

Environmental alerts will be periodically prepared and sent to sites for posting on notice boards.

Key changes to environmental legislation will be sent by email to all project managers and site managers

### **10.2 EXTERNAL COMMUNICATIONS - COMMUNITY**

Community complaints must be reported as environmental incidents and all correspondence relating to the complaint must be retained and filed on site, including information on how the complaint was resolved.

All community consultation will be completed by Department of Education with TCG notified as required. All community complaints will be notified to the relevant stakeholders in line with clause B8 of the SSDA. The majority of these tools will be implemented by the Department of Education with TCG assisting as required.

Examples of Communication Tools:

- Information Line
- Hotline Scripts
- Display Boards
- Letterbox Drops
- Information Booths

### **10.3 REGULATOR SITE VISITS AND WRITTEN COMMUNICATIONS**

If an authorised officer (Council or DECCW representative) visits your site, you should contact the HSE manager or construction manager for assistance and advice. While you can request that a higher level of management assists you, you cannot refuse to answer questions. An authorised officer must show their identification on request (ensure you ask for it) and has the right to ask any person on site questions relating to environmental issues. When being enquired, always be polite, discuss only the facts and do not elaborate or provide opinions.

Any Penalty Infringement Notices or official warnings from regulators are to be treated as 'incidents' and reported in the Incident Report Form, investigated and corrective actions assigned and completed to address the root cause of the infringement.

Any communication from a regulator must be notified to the HSE manager. Records of all communications must be retained and appropriately filed.

All Incident Reports and NCRs will be provided to the superintendent for notification to the Planning Secretary as per the requirements of the SSD

### **11. ENVIRONMENTAL RISKS**

### **11.1 STANDARD OPERATING PROCEDURES**

Several standard operating procedures have been developed as part of the HSE Management System to provide detailed information on the management of site issues in relation to environmental and safety risks. The following procedures have been developed to date and are available on SharePoint:

- SE-OP-01 Hazardous Substances and Dangerous Goods Procedure
- E-OP-01 Erosion and Sedimentation Controls
- E-OP-02 Waste and Resource Management
- QSE-OP-02 Asbestos Management Procedure
- SE-OP-04 Noise Management (OHS and Environmental)

### 11.2 SAFE WORK METHOD STATEMENTS (SWMS)

While Safe Work Method Statements are primarily used in WHS to manage high-risk activities, any relevant or foreseen environmental risk must also be considered in the preparation of the SWMS.

Taylor's site managers or their nominees are responsible for ensuring that subcontractors include environmental issues in their task-specific SWMS by using **SE-F-14**. If environmental issues are not appropriately addressed, the subcontractor should be advised of the requirements. It is recommended that subcontractors are assisted with identifying environmental issues, particularly during the early implementation of Taylor's Environmental Management System and PEMP.

### **References:**

- SE-F-03 Taylor Construction Group Safe Work Method Statement
- SE-F-14 Safe Work Method Statement Review Form
- SE-F-14.1 Contractor's HSE Plan Review

### **11.3 ENVIRONMENTAL RISK MANAGEMENT AND CONTROL**

This section provides an overview of environmental issues typically encountered on site based on the generic issues identified in the master Environmental Risk Assessment. When preparing this document, the project manager should add any additional environmental issues that may have been identified through the environmental impact assessment, development consent/ approval, etc.

### 11.3.1 PROJECT DESIGN – ENVIRONMENTAL CONSIDERATIONS

During the planning phase of the project, consideration should be given to the following:

- How will design minimise energy use and allow for and use the natural environment?
- How will materials, products and systems be selected or designed to minimise adverse impacts and/ or benefit the environment?

These questions should be considered prior to commencement of the project and may require the input from the client.

### 11.3.2 SOIL AND WATER MANAGEMENT/ SEDIMENTATION AND EROSION CONTROL

Taylor Construction Group and subcontractors shall plan and carry out works to avoid erosion and prevent sediment leaving the site to the surrounding land, watercourses, water bodies, wetlands and storm water drainage systems. This includes the installation of erosion and sedimentation controls prior to commencing clearing works. Where possible, works should be staged to reduce the areas cleared at the same time to minimize soil disturbance. Where required, prepare erosion and sediment control plans (ESCP), install the controls in accordance with the plan and maintain them regularly. For more detailed information, refer to the procedure and external guidelines listed below.

The following controls will be implemented within Taylor Construction site boundaries to control erosion, sediment and pollution within the site:

**Sediment and erosion control devices**. Unnecessary disturbance of the site shall not occur, and all cuts are to be stabilised as soon as possible after the completion of site earthworks. Extra care will be taken to prevent sediment run-off into all neighbouring lots and storm water. Any collected silt will be disposed of in accordance with all other relevant codes and standards.

**Silt fences**. Silt fences are to be installed to site boundaries as required. Geotextile fabric will be fixed to the temporary construction fencing where 'downhill' boundaries exist. The fabric will be turned down under the existing ground line and secured at regular intervals not exceeding 3m, in accordance with the following diagram:





**Vehicle access**. Vehicular access will be controlled to prevent sediment being tracked. This will be done by maintaining an all-weather access/ driveway composed of an approved course aggregate surface. Moreover, if the need arises, a shaker grid will be installed to the main access by Taylor during the construction works. Any sediment that is tracked onto the surrounding roads will be cleaned off in a timely manner.

**Storm water inlets**. All storm water inlets are to be covered with geotextile fabric in a roll or other format to ensure that no sediment enters into the storm water system. This will be the responsibility of the site manager to enforce. The rolls will not only be placed directly at the inlets as shown below, but also at regular intervals in the gutters 'upstream' from the inlets, creating multiple barriers.



**Stockpiles**. If appropriate topsoil is to be stockpiled on site, then the following measures will be put in place:

- Stockpiles shall be stored at least 2 metres away from drainage lines, natural watercourse and established trees;
- Stockpiles will have temporary silt fences around it to create an enclosure and, if necessary, they will be covered with shade cloth or tarpaulin to retain the materials inside it. The location of stockpiles will be determined on site.

**Monitoring**. To maintain the various erosion and sediment control devices, regular inspections, repairs and cleaning will be carried out on the silt fences to the boundaries, stockpiles, waste enclosures and to the stockpile covers.

#### **References:**

- E-OP-01 Erosion and Sedimentation Controls Procedure
- Managing urban stormwater: soils and construction, Volume 1, 4<sup>th</sup> edition, 2004

#### **11.3.3 VEGETATION MANAGEMENT**

Taylor Construction Group and subcontractors shall plan the works to preserve existing trees, plants and other vegetation, that are to remain within or adjacent to the works. Areas of the site that contain vegetation that must be preserved should be fenced-off, marked or otherwise isolated to ensure they are not inadvertently damaged. If there are any endangered species on site, specific management techniques may be required; these should be addressed in an Environmental Impact Assessment.

On completion of the works, all areas disturbed by construction activities shall be restored to the contract specifications. Where required and practical, efforts will be made to mulch and re-use vegetation on site or send it to a green waste recycling facility.

### 11.3.4 WASTE MANAGEMENT AND RESOURCE RECOVERY

Taylor Construction Group and subcontractors shall adopt the hierarchy of waste (avoid, reduce, reuse, recycle/ reprocess), dispose to maximise resource recovery and minimise disposal wherever possible and practical. The importance of appropriate waste management practices is to be included in the site induction.

Sites are to be provided with suitable bins and skips for appropriate collection and separation of waste and recyclables, and these are to be collected with appropriately qualified and licensed (where required) waste contractors.

Prior to disposal, waste must be classified in accordance with the DECCW Waste Classification Guidelines (latest version 2014) prior to transporting waste off-site. Excerpts from the waste classification guidelines are contained within appendix B of the **Waste and Resource Management Procedure E-OP-02**. Waste receipts must be kept for legal requirements; details of waste separated and disposed of is to be documented in the **Waste and Recycling Register QSE-R-16**. The information from the register is to be used to complete the waste management section of the KPI Monthly Report Form and forwarded to the HSE manager for tracking of TCG environmental targets.

#### **References:**

- E-OP-02 Waste and Resource Management Procedure
- SE-F-23 KPI Monthly Report Form
- QSE-R-16 Waste and Recycling Register

### **11.3.5 NOISE MANAGEMENT**

From an environmental viewpoint, noise can create a nuisance to neighbours and members of the public and is subject to legal requirements. Taylor Construction Group and subcontractors shall make all practical efforts to comply with statutory requirements for noise management and minimize nuisance to neighbours. Protection of the Environment Operations Act 1997 (sections 139 and 140) and the Department of Environment and Climate Change NSW 'Interim Construction Noise Guideline' risk controls for noise must be incorporated in relevant Safe Work Method Statements, including nuisance to neighbours. Where required by development consent conditions, environmental noise monitoring will be undertaken as per the conditions. Further information on noise management from a WHS and environmental viewpoint is contained within the Noise Management Procedure.

#### References:

SE-OP-04 Noise Management Procedure

### 11.3.6 WATER QUALITY MANAGEMENT

Taylor Construction Group and subcontractors shall comply with the requirements of section 120 of the Protection of The Environment Operations Act 1997 (Prohibition of Pollution of Waters). The act prohibits all forms of water pollution unless specifically authorised through and environment protection license (EPL). On most projects undertaken by Taylor Construction, an EPL will not be required.

There are substantial penalties for individuals and the company and controls must be in place to ensure that site activities do not cause water pollution.

Potentially hazardous activities, including washing out of concrete delivery vehicles and washing down of construction plant, are not permitted on site except in specially constructed bays that retain high PH water. Washing out of concrete delivery vehicles offsite is only permitted at locations approved for that purpose by the appropriate authority. Drains will be labelled to reduce likelihood of misuse.

Washing of paint brushes must be undertaken to avoid any paint wash-water entering drains or waterways. Wash-water must be removed from site and appropriately treated and/ or disposed of. The chemicals, acids or residue from any 'wet trades' such as brick cleaning must also be prevented from entering drains and waterways.

All liquids and materials that could cause water pollution must be stored in areas with secondary containment. Also refer to section on hazardous substances, chemicals, oils and other contaminants and the related procedure.

**Pumping of storm water**. If a sediment basin is required and storm water is required to be pumped out of the site, the pump intake is to be located no more than one metre (1m) below the surface of the collected water to reduce the amount of settled silt being pumped out for further treatment.

**Storm water treatment**. There are two treatment options for storm water collected on site, flocculation and/ or filtration. For each option the applicable procedures in their entirety are to be followed.

#### **References:**

- SE-OP-01 Hazardous Substances and Dangerous Goods Procedure
- Storing and Handling Liquids Environmental Protection (DECCW)

### **11.3.6 GROUND WATER MANAGEMENT**

Refer to annexure appendix 13 for further details. Furthermore, see brief commentary.

- Groundwater was encountered within the three monitoring wells installed during the DSI, between 3.85 and 3.87 metres below top of casing (existing ground level) within the natural sands.
- Concentrations of contaminants were generally detected below the screening criteria, with the exception of a very minor exceedance for copper above the Groundwater Investigation Level (0.002 mg/L). This is considered a function of regional water quality.
- Our understanding of the planned construction is that proposed excavations would not encounter groundwater, being generally shallow (approximately 2 mBGL maximum). No dewatering or extractive activities are proposed; therefore, management is unlikely to be required.
- During construction, risks of groundwater contamination such as spills and leaks from on-site plant will be controlled via implementation of the Construction Environmental Management Plan, ensuring good environmental practice.

### 11.3.7 AIR QUALITY MANAGEMENT

Taylor Construction Group and subcontractors shall comply with all statutory requirements governing air quality management, i.e. Protection of The Environment Operations (POEO) Act 1997, section 124, and the POEO Clean Air Regulation 2010.

The project/ site manager will ensure that all construction facilities erected at the site are designed and operated to minimise the emission of smoke, dust, cement dust, plant and vehicle exhausts and other substances into the atmosphere.

Taylor Construction Group and subcontractors shall employ construction methods that will keep the air pollution to a minimum and apply measures such as those listed below to ensure that airborne pollutants do not cause pollution and nuisance near the works:

- The spraying of disturbed soil and roads with water whilst under construction as required;
- The removal of mud from the wheels and bodies of plant and vehicles before it enters public roads or other sealed pavements. This could be rumble grids, dry brushing, wheel wash, etc., depending on the nature of the site;
- The removal of mud or dirt spilt by construction equipment onto public roads or other sealed pavements;
- The provision of coverings or stabilization of topsoil stockpiles;
- Covering all loads leaving the site;
- Stabilisation of ground likely to be exposed for significant time periods (e.g. using sterile seed);

- Fitting power tools with dust collection devices where practical;
- Keeping all plant and equipment well maintained and not leaving them idling while not being used;
- Reporting excess air emissions from plant and arranging for a service to fix the problem.

On-site burning of any materials is not permitted on Taylor Construction sites.

### 11.3.8 HAZARDOUS SUBSTANCES, CHEMICALS, OILS AND OTHER CONTAMINANTS

Prior to commencing work on site, an assessment of the quantities and locations of hazardous substances, chemicals, etc. likely to be held on site must be undertaken. The location of hazardous substances and other contaminants must be marked on a site map (refer to appendix 5). The site manager will use the assessment when planning the works to minimise the potential for pollution. This includes providing appropriate storage; separation of incompatible materials and bunding; and ensuring that all activities that use or handle these substances are undertaken in an area that will not cause water pollution or land contamination.

Spill kits will be provided wherever substances that could potentially cause pollution are stored and handled. Relevant site personnel will be trained in spill response and will be familiar with the contents and function of the spill kit materials on site. All spills, no matter how small, must be cleaned up immediately and be 0reported as an environmental incident.

Refuelling or maintenance of plant and equipment, or any other activity which may result in the spillage of a chemical, fuel or lubricant on the site, is not permitted without appropriate temporary controls measures.

The use and storage of any hazardous substances or other chemicals will be made strictly in accordance with the manufacturer's instructions and the relevant materials safety data sheets (MSDS).

#### **References:**

- SE-OP-01 Hazardous Substances and Dangerous Goods Procedure
- Storing and Handling Liquids Environmental Protection (DECCW)

**Spill response**. Major spillages must be notified immediately, and all efforts made to contain the spill and prevent escape into storm water drains and waterways, provided it is safe to do so. If the spill is beyond the capacity of the site personnel to contain and clean up, specialist services must be employed.

Minor spillages must be cleaned up immediately. If soil or ground is contaminated, the soil is to be removed and placed into a bag or designated waste drum and disposed of appropriately.

If the spill enters drains or waterways, the incident may be required to be reported to the appropriate regulatory authority (local council) as soon as practicable, in accordance with the duty to report under the POEO Act. The decision to report must be discussed with the HSE manager or a director prior to making the report.

#### Spill response procedures for this project are:

- Provide site map showing location of all hazardous substances, chemicals, fuels, oils, spill kits, storm water drains and natural waterways (appendix 5);
- Spill Response Procedure flow chart (appendix 3);
- Call emergency services (fire, hazmat): call 000
- Local council phone number: \_\_\_\_\_\_
- MSDSS are located at: \_\_\_\_\_\_

### 11.3.9 PESTICIDE USE AND STORAGE

If pesticides are used at the site, they must be stored appropriately as per 'hazardous substances' section (11.3.8 above) and used in accordance with the manufacturer's requirements and the NSW Pesticides Management Act and Regulations. The act and regulations have strict record keeping requirements for the use of more than 20 litres of product.

Taylor Construction Group general policy on the use of pesticides is that they should only be applied by suitably qualified pest control contractors.

### 11.3.10 CONTAMINATED LAND

Prior to commencing project work, checks should be made on the potential for the site to be contaminated. This should generally be identified by the client and addressed in an Environmental Impact Assessment. If the site is found to be contaminated, the recommendations for management of the contaminated soils from the assessment and other reports should be incorporated into this PEMP below.

Should contamination be suspected once working on the site (e.g. unusual odours, visual indications of soil or water pollution, etc.) work should cease immediately and the Taylor's project/ site manager contacted. Where relevant, the client should be notified by Taylor's project manager and investigations undertaken into the nature of the contamination. Work should not recommence until the nature and extent of the contamination is established and can be safely managed without environmental risk.

Taylor Construction Group and subcontractors shall comply with relevant statutory requirements of Contaminated Land Management Act and the POEO Act (NSW) in relation to disturbance or treatment of potentially contaminated ground.

The company shall install any control measures needed to divert surface run-off away from contaminated ground and to treat any surface run-off contaminated by exposure to contaminated ground. Contaminated material removed from site must be recorded on the **Waste and Recycling Register QSE-R-16**.

### References:

Waste and Recycling Register QSE-R-16

### 11.3.11 ACID SULPHATE SOILS (ASS)

Acid sulphate soils are naturally occurring soils generally found in estuarine areas. When exposed to air, they can oxidize and cause run-off of highly acid water. Acid sulphate soils require specialist management techniques.

The client should be aware of any potential for encountering acid sulphate soils and, if there is a potential, it should be addressed in the Environmental Impact Assessment undertaken for the project.

### 11.3.12 COMMUNITY COMPLAINTS

Community complaints should be treated as 'incidents': they must be reported to the HSE manager, be thoroughly investigated and reported on SharePoint. Reference to these are also to be documented and included in site diary entries. The project or site manager should try to resolve the issue with the community member in a conciliatory manner.

### **References:**

- SE-F-21 Incident Report Form
- SE-F-22 Incident Investigation Form (report on SharePoint forms are back-up only)
- SE-F-23 KPI Monthly Report (as above)

### 11.3.13 ARCHAEOLOGY AND HERITAGE MANAGEMENT

If any unexpected heritage item is discovered during maintenance and construction works, the following must be taken into consideration:

**Indigenous heritage**. All aboriginal objects, regardless of significance, are protected under law. Should any deposit, artefact or material evidence (including skeletal remains) of Aboriginal origin be found, Taylor Construction Group and subcontractors **shall cease all construction works that might disturb or damage** the deposit, artefact or material. The project manager will notify the client immediately, who will then consult the relevant government department (i.e. EESG or DPIE). Examples of Aboriginal objects include stone tool artefacts, shell middens, axe grinding groves, pigment or engraved rock art, burials and scarred trees.

**Historic heritage**. Historic (non-Aboriginal) heritage items may include archaeological 'relics' and other historical items such as works, structures, buildings or moving objects. Should any item which is suspected to be of historical heritage value be encountered, Taylor Construction Group and subcontractors **shall cease all construction works that might disturb or damage the item**. The project manager will notify the client immediately, who will arrange for an officer from the relevant government heritage department to be consulted. A 'relic' is 'any deposit, artefact, object or material evidence that relates to the settlement of the area, not being Aboriginal settlement; and is of State or local heritage significance'. It can include bottles, remnants of clothing, pottery, building materials and general refuse.

### **References:**

- Heritage Act 1977
- National Park and Wildlife Act 1974
- Unexpected Heritage Items Procedure Roads and Maritime Services, 2015

### **11.3.14 ADDITIONAL ENVIRONMENTAL ISSUES**

As required by the SSDA for the project, TCG will endeavour to ensure all external lighting during construction meets the requirements for AS 4282-2019 Control of the obstrusive effects of outdoor lighting. TCG will engage specialty consults to provide advice regarding the light type and locations to ensure compliance to this clause.

The Remediation Action Plan details 80818157

### **12. INCIDENT AND EMERGENCY MANAGEMENT**

### **12.1 EMERGENCY RESPONSE**

The Emergency Response Plan for this site has been developed based on a template provided in the **SE-P-07 Project Emergency Control Management Plan**. Additional information for the management and control of emergency situations can be found in the Project Safety Plan (**WHS-PLAN-02**) but a Spill Response Procedure Flow Chart is contained in appendix 3 of this plan. For additional information on response to a spill, refer to section 11.3.8 'Spill response'.

Emergency response posters and flow charts are to be posted in the site and induction office, WHS notice boards, in crib rooms and other areas of the site as required.

References:

- SE-P-07 Project Emergency Control Management Plan
- QSE-F-10.1 Pre-Start Site QSE Checklist
- SE-F-31 Emergency Evacuation Rehearsal Register
- SE-F-05 Site Layout Evacuation Plan
- SE-F-06 On-Site Emergency Control Plan

### **12.2 INCIDENT REPORTING AND INVESTIGATION REPORTING**

Site environmental incidents must be reported to the project/ site manager as soon as practically possible. In addition, any major environmental incidents must also be reported to the HSE manager in accordance with the **Incident Reporting and Investigation Procedure QSE-OP-05**. The priority is to ensure that the situation is controlled as soon as possible and to

avoid further pollution or other adverse environmental consequences. Reporting of the incident should not delay any immediate responses to the incident.

### Incident Reports must be completed and forwarded to the HSE manager within 24 hours and must be kept for a minimum of five (5) years.

Environmental incidents that cause, or threaten to cause, material environmental harm must be reported to the Appropriate Regulatory Authority (ARA, the local council in which the project is located) as soon as practicable following the incident. This would include any spillage or leak of substances that cause water or land pollution. Material environmental harm generally means that the harm is not trivial and/ or costs more than \$10,000 to clean up. The phone number of the ARA should be included in the Emergency Response Plan.

If the site manager believes that the incident may be reportable to the Appropriate Regulatory Authority (ARA), contact the WHS manager for further advice prior to making an Investigation Report.

All environmental incidents that causes, or could potentially result, in an environmental harm are to be investigated, and corrective actions implemented following the investigation. Depending on the seriousness of the incident, key site personnel, the HSE manager, witnesses, etc. should be consulted on the investigation and in determining appropriate corrective or preventive actions.

The Planning Secretary must be notified in writing to compliance@planning.nsw.gov.au immediately after the Applicant becomes aware of an incident. The notification must identify the development (including the development application number and the name of the development if it has one) and set out the location and nature of the incident.

#### **References:**

- QSE-OP-05 Incident Reporting and Investigation Procedure
- SE-F-21 Incident Report Form (report on SharePoint forms are back-up only)
- SE-F-22 Incident Investigation Form (as above)

### **12.3 UNEXPECTED CONTAMINATION PROCEDURE**

The Remediation Action Plan Plan provide action following the discovery of unexpected contamination. This procedure is to be followed and the required stakeholder contacted as detailed in the communication section of this plan. This is to be developed further with consultation with civil contractor.

### **13. ENVIRONMENTAL MONITORING AND INSPECTIONS**

### **13.1 SITE ENVIRONMENTAL INSPECTIONS**

Site environmental inspections are to be undertaken weekly using **SE-F-02 HSE Inspection Checklist** to ensure that environmental hazards are recognised and can be promptly rectified. Additional environmental issues may be added to the site HSE inspection form as required.

### **13.2 PHYSICAL MONITORING**

For many projects undertaken by Taylor Construction, physical environmental monitoring is not typically required (e.g. dust, water quality, noise levels, air quality, etc.). Should the Environmental Impact Assessment specify that environmental monitoring is required, the project manager will arrange for appropriately qualified consultants to undertake that monitoring. All equipment used to measure environmental parameters will be calibrated in accordance with manufacturer's instructions.
### 13.3 MONITORING OF PROJECT ENVIRONMENTAL TARGETS

Objectives and targets for the project are specified under 'Objectives and Targets' section of the PEMP. Data relating to these targets will be documented daily using site diaries, reviewed by project/ site managers on a monthly basis and forwarded to the HSE manager for reporting to senior management.

The KPI Monthly Report captures information on lag and lead indicators. The current indicators are:

Lag indicators:

- Number of environmental incidents;
- Number of penalty infringement notices (pins) or clean-up notices;
- Number of community complaints.

Lead indicators:

- Number of toolbox talks (combined with WHS and environmental issues);
- Number of environmental inspections undertaken;
- Waste and recycling volumes (initially to set benchmark, then track improvement)

Add any additional KPIs that may be set from Environmental Impact Assessments, conditions of consent and client requirements, etc.

#### 14. NON-CONFORMITY, CORRECTIVE AND PREVENTIVE ACTIONS

Taylor Construction has a non-conformance and corrective action process in place to address all non-conformities across the business, regardless of the source. The process is defined in the **Reporting Non-Conformance, Corrective and Preventive Actions Procedure QSE-OP-29**. Typically, environmental non-conformances would result from audits, inspections and from observations by the site manager of poor environmental practices, including incorrect waste disposal/ recycling (liquid waste, poor storage of hazardous substances, oils, chemicals and damage to existing environmental controls such as sediment fencing, etc.). Non-conformances may be issued for serious breaches or repeated minor breaches.

The Planning Secretary must be notified in writing to compliance@planning.nsw.gov.au within seven days after the applicant becomes aware of any non-compliance. The Certifying Authority must also notify the Planning Secretary in writing to compliance@planning.nsw.gov.au within seven days after they identify any non-compliance.

The notification must identify the development and the application number for it, set out the condition of consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

#### **References:**

- QSE-OP-29 Reporting Non-Conformance, Corrective and Preventive Actions Procedure
- Notices (electronic) raising of non-conformances (internal)
- Notices (printable) for raising NCRS on subcontractors

### **15. PURCHASING/ PROCUREMENT**

Purchasing and procurement includes the purchase of goods and the supply of services of contractors. When purchasing goods, the following environmental considerations should be considered:

- Is there a less toxic, less harmful alternative (e.g. chemicals, paints, solvents, etc.)?
- Bow much do we need? Will anything be wasted? Precise ordering will minimise wastage of resources and money;
- Can the product be purchased locally to reduce transport impacts?

- Are there any opportunities to use 'green' products in construction to improve the efficiency of the building in terms of energy and water usage (design issue – may need client input)?
- S-F-18.1 Pre-Hire Purchasing Assessment Form

When engaging contractors, the following should be taken into consideration:

- Has the environmental capability been assessed and signed-off through contract administration?
- Has the contractor attended a pre-award interview and assessed Taylor Construction Group environmental requirements?
- Has Subcontractor Tender Interview and Assessment Form QSE-F-15.6 been completed?

#### **References:**

- QSE-OP-15 Subcontracting, Purchasing and Hiring Procedure
- QSE-F-15.6 Subcontractor Tender Interview and Assessment Form

### **16. CONTRACTOR MANAGEMENT**

Taylor Construction Group, as the principal contractor, will ensure that contractors performing work on site are aware of the environmental requirements and enforce compliance to requirements.

Prior to commencing on site, contractors are to be inducted to the site as part of the HSE requirements. Inductions will include an environmental component to ensure all contractors are aware of the environmental risks on the project.

Contractors are required to submit Safe Work Method Statements (SWMS) prior to commencement of work as part of the WHS requirements. SWMS must also address the environmental risks for the tasks and will be reviewed and checked-off on **SE-F-14 Safe Work Method Statement Review Form** by the site manager to ensure that all environmental risks are appropriately identified, and controls documented.

Environmental inspections will be undertaken at least once monthly. This will include an inspection of the contractor's work area and checking that all environmental controls are in place. Serious breaches or repeated minor breaches will result in the issue of a Non-Conformance Report, and the issue must be resolved within designated time frames.

### **17. ENVIRONMENTAL AUDIT**

Audits of the Environmental Management System will be conducted regularly to ensure the system is appropriately in place and implemented. As part of the audit program, audits will also be undertaken on project sites for compliance to the requirements of the Project Environmental Management Plans. Audits should be undertaken by suitably experienced auditors.

Projects that have duration of more than six months will have at least one audit against the PEMP and, after the 6 months, will be audited at least once per year. This will generally be undertaken as an integrated audit in conjunction with the Project Safety Plan and Project Management Plan (Quality). Projects with high-risk activities or that performed poorly at the initial audit may be audited at a higher frequency. The HSE manager is responsible for coordinating project audits.

#### **18. REVIEW OF THIS PLAN**

This Environmental Management Plan must be reviewed by the project manager in consultation with the project team and HSE manager whenever any major change occurs on the site that may have an impact on the environment, or at least twice (every 6 months) during construction.

Further to this, the following plan will be reviewed and revised (as required) in line with Clause A40 of the SSD detailed below:

Revision of Strategies, Plans and Programs



Within three months of

- a) The submission of a compliance report under condition A32
- b) The submission of an incident report under condition A36
- c) The submission of an Independent Audit under condition C36
- d) The issue of a direction of the Planning Secretary under condition A2 which requires a review,

The strategies, plans and pograms required under this consent must be reviewed, and the Planning Secretary and the Certifying Authority must be notified in writing that ta review is being carried out. If necessary, to either improve the environmental performance of the development, cater for a modification or comply with a direction, the strategies, plans, programs or drawings required under this consent must be revised, to the satisfaction of the Planning Secretary and/or Certifying Authority. Where revisions are required, the revised document must be submitted to the Planning Secretary and/or Certifying Authority for approval and/or information (where relevant) within six weeks of the review.

Note: This is to ensure strategies, plans and programs are updated on a regular basis and to incorporate any recommended measures to improve the environmental performance of the development.



#### **APPENDIX 1: GLOBAL MARK ACCREDITATION**



This certificate confirms that the company below complies with the following standard:

| Company Name                                   | Taylor (  | Construction Group  |                                  |                           |                          |                 |
|--|---|---|----------------------------------|---------------------------|--------------------------|-----------------|
| Company Other N                                | Vame  | 1   |                                  |                           |                          |                 |
| Client ID                                      | 101009  |   | Scheme                           | Environmental<br>Scheme   | l Management S           | ystems          |
| Certification Stan                             | adard AS/NZS<br>with gu                           | ISO 14001-2016: Env<br>idance for use                       | vironment                        | al management             | systems - Requ           | irements        |
| Scope of Certifica                             | tion Design,                                      | construction, proje   | ct manage                        | ment and prop             | erty developme           | nt services     |
| Type of Certificat                             | ion Manage  | ement System  |                                  |                           |                          |                 |
| Certificate D                                  | ATES:   |   |                                  |                           |                          |                 |
| Original / Initial                             | 19  | /11/2009  | Last Cert                        | ificate update            | 18/05/2018               |                 |
| Certification / Re                             | Certification 7/                                  | 05/2018   | Expiry                           |                           | 7/05/2021                |                 |
| Last Cartification                             | Decision 18                                       | /05/2018  |                                  |                           |                          |                 |
| APPROVED CO                                    | MPANY/SITE ADD                                    | RESS(ES):   | -                                |                           |                          | 7               |
| Level 13, 157                                  | Walker Street                                     | North Sydney 2060   | NSW Aust                         | ralia                     |                          |                 |
|  |   | , , , ,   |                                  |                           |                          |                 |
| The use of the Accre                           | ditation Mark indicates                           | accreditation by the Joint Acc                              | reditation Syste                 | m of Australia and        |                          |                 |
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| This certification ren<br>continued compliance | nains valid until the a<br>with the certification | bove mentioned expiry date<br>standard, and Global-Mark's T | and subject to<br>erms and Condi | the organisation's tions. |                          | JAS-ANZ         |
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### **APPENDIX 2: ENVIRONMENTAL POLICY**

### **Environmental Policy**

Taylor regards appropriate management of environmental issues as integral to our business. We are committed to the protection of the environment and ecologically sustainable practices in all aspects of our operations.

We will comply with all relevant legislation governing the protection of the environment. Our environmental management systems will address all aspects of the International Standard, ISO 14001:2016: "Environmental Management Systems - Requirements with guidance for use".



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IN MANAGING OUR BUSINESS, WE MAKE A COMMITMENT TO:

- Work pro-actively with our clients, regulators, and Continually improve our environmental other community stakeholders to enable environmental issues to be addressed at an early stage of development.
- Take local community views into consideration and ensure that we inform, listen to and respond Encourage a sense of personal responsibility for to reasonable concerns relating to our projects.
- Undertake our activities in a manner that is consistent with the principles of ecologically sustainable development
- Prevent pollution and reduce adverse environmental impacts of our activities on the natural, built and cultural environment.
- Promote the efficient use of natural resources and reduce waste through the use of the waste hierarchy -avoid, reduce, re-use, recycle and finally dispose.
- Set realistic environmental objectives and targets at all relevant levels within the company and continually monitor performance.
- Promote environmental awareness among all employees and subcontractors to achieve our environmental objectives.

- performance through periodic review and evaluation of our policy and management systems to ensure they remain suitable, adequate and effective.
- environmental issues amongst employees and subcontractors through effective communication, training and positive organisational culture.

This policy will be reviewed in December 2020.

Clive Wickham Chief Operating Officer



### APPENDIX 3: TAYLOR CONSTRUCTION SPILL RESPONSE PROCEDURE FLOW CHART



### APPENDIX 4: SITE ENVIRONMENTAL EMERGENCY RESPONSE PLANS

| Potential emergency   | What to do?   | Relevant authorities and<br>persons   |
|---|---|---|
| Injury caused by:<br>- Fire<br>- Explosion<br>- Machinery accidents<br>- Minor injuries   | <ul> <li>For serious injuries, call an ambulance. You should also have the contact details of the nearest doctor, medical centre and hospital;</li> <li>Immediately inform the site first aid officer;</li> <li>Follow the procedures as detailed in the Site Safety Plan;</li> <li>For major injuries, contact the site manager or project manager.</li> </ul>   | Emergency services<br>Nearest doctor<br>Medical centre<br>Site manager<br>Project manager |
| Fire<br>Fire at the diesel tank<br>Fire at any of the machineries<br>Fire caused by vandalism   | <ul> <li>Evacuate all personnel to a safe area immediately;</li> <li>Call the fire brigade (emergency services);</li> <li>If the fire is likely to damage neighbouring property, inform the adjacent residents;</li> <li>Follow the procedures as detailed in the Site Safety Plan;</li> <li>For major fire emergencies, contact the site manager or project manager;</li> <li>Inform terminal security.</li> </ul> Note: fire extinguishers are located throughout the site as detailed in the Emergency Evacuation Map.   | Emergency services<br>Site manager<br>Project manager<br>Adjacent residents               |
| Spills management and<br>contaminated soils<br>Major spills:<br>• Spill or release of diesel fuel or oil;<br>• Spill or release of other hazardous<br>chemicals or material | <ul> <li>For major spills (defined as a spill that is likely to have direct environmental consequences):</li> <li>Immediately call the Fire Brigade and notify superintendent;</li> <li>Identify the source of the spill;</li> <li>Refer to the Material Safety Data Sheet (MSDS) and evaluate the hazards of the material.</li> </ul>  | Emergency services (fire<br>brigade)<br>HSE manager<br>SM and PM<br>EPA                   |
| Minor site spills<br>Acid sulphate soils  | <ul> <li>If the material is dangerous, evacuate the site immediately and notify all neighbours;</li> <li>If it is safe to do so, halt the source of the spill immediately;</li> <li>Contain the spill and control its flow;</li> <li>Block storm water drains downstream of the spill;</li> <li>EPA and local council must be notified about any spills that are likely to threaten the environment;</li> <li>Minor spills (defined as spills which can be contained and rectified correctly without the need of external services), shall be contained and rectified with the site spill kit and disposed of correctly. Superintendent to be notified via incident report;</li> <li>Reported to the site manager;</li> <li>Where acid sulphate soils are discovered, the spoil shall not be removed from site; subsequent notification and testing will follow.</li> </ul> | Emergency services (fire<br>brigade)<br>HSE manager<br>SM and PM<br>EPA                   |
| Heavy rainstorm and flood beyond<br>the capacity of the sediment and<br>erosion controls on-site or failure of<br>the sedimentation control measures.                       | <ul> <li>Contain/ minimise the flow;</li> <li>Contact council immediately;</li> <li>Investigate reasons for failure and prepare an incident report;</li> <li>Contact the project manager.</li> </ul>  | Council<br>Site manager<br>Project manager  |
| Discovery of items of conservation value (e.g. flora and fauna, heritage).  | Fence-off the area as 'no go' zone and contact the site manager or project manager immediately for further action.  | Site manager<br>Project manager   |
| Discovery of contaminated material<br>on site (e.g. underground fuel<br>storage tanks).   | Fence-off the area as 'no go' zone and contact the site manager or project manager immediately for further action.  | Site manager<br>Project manager   |

#### **APPENDIX 5: SITE MAP – ENVIRONMENTAL REQUIREMENTS**

NOTE: Insert here the site map with location of hazardous substances, dangerous goods, storm water drains, waterways, spill kits and other environmental requirements.



Taylor – Construction Environmental Management Plan – Kyeemagh Public School , Kyeemagh NSW 2216

APPENDIX 6: ENVIRONMENTAL LEGAL AND OTHER REQUIREMENTS REGISTER

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| Project :   | KYEEMAGH PUBLIC SCHOOL  |   |  | Date: 17.07.20  |
|   | ENVIRO  | NMENTAL -LEGAL -REG   | ISTER -01  |   |
|   | Eg  | nvironmental Legal Regis  | ster   |   |
| Legislation   | Key Requirements  | Relevance to Taylor<br>Construction Group   | Mechanism for Evaluating<br>Compliance   | Link to legislation and relevant web sites  |
| Protection of the<br>Environment<br>Operations Act 1997<br>(POEO Act) | The POEO Act is the key piece of environment<br>protection legislation, and is administered by the<br>Department of Environment and Climate Change<br>(DECC) – formerly EPA. The objective of the Act is to<br>protect restore and enhance the quality of the<br>environment in NSW with a need to maintain<br>ecologically sustainable development.  | Environmental Protection Licences<br>may be required for large projects by<br>TPG. (Refer to Schedule 1)<br>Therefore, in most cases, the local<br>council is the Appropriate Regulatory<br>Authority   | Environmental inspections<br>Compliance checks / audits against<br>Environmental Management Plan   | www.austlii.edu.au/au/legis/nsw/cons<br>ol_act/poteoa1997455/   |
|   | Schedule 1 of the POEO Act lists activities that are<br>subject to environmental licensing.<br>Where an environmental Protection Licence is<br>required, the DECC is the Appropriate Regulatory<br>Authority (ARA). In most other cases, the local council<br>is the ARA.   | Environmental protection offences<br>and penalties, and a duty to notify of<br>environmental harm, apply to all<br>personnel working on the project.<br>Managers, supervisors, workers and<br>contractors need to comply with all<br>requirements of the Act, with<br>particular emphasis on duty to notify,<br>and prevention of pollution (see key<br>sections in adjacent column to the<br>left) |  | <u>http://www.environment.nsw.gov.au/li</u><br><u>censing/</u>  |
|   | The POEO Act imposes severe penalties for causing<br>environmental harm, polluting water, not operating<br>equipment in an efficient manner and inappropriate<br>handling and disposal of waste. Penalties also exist fo<br>failure to notify pollution incidents.<br>The following is a summary of key sections of the Act   | The company and individuals can be<br>prosecuted in criminal proceedings<br>under this Act.   | Environmental inspections<br>Plant pre-start inspections and plant<br>maintenance<br>Compliance checks / audits against<br><u>Environmental Management Plan</u>  |   |
|   | <ul> <li>that must be complied with:</li> <li>S 120 – Prohibition of Water pollution</li> <li>S 124 - 125 Air pollution - failing to maintain and operate plant, or carry out maintenance work on plant, in a proper and efficient manner.</li> <li>S 128 Standard of air impurities not to be exceeded (air pollution)</li> <li>S 139 – Noise Pollution – operation of plant S 142 A-E – Land Pollution (offence if cause or permit land to be polluted</li> </ul> |   | Environmental inspections<br>Plant pre-start inspections and plant<br>maintenance<br>Compliance checks / audits against<br>Project Environmental Management Plan | http://www.environment.nsw.gov.au/<br>water/polltreatment.htm<br>http://www.environment.nsw.gov.au/a<br>ir/<br>http://www.environment.nsw.gov.au/n<br>oise/ |

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| Legislation | Key Requirements   | Relevance to Taylor<br>Construction Group   | Mechanism for Evaluating<br>Compliance  | Link to legislation and relevant web sites |  |
|             | S 143 – Land Pollution (unlawful transport of<br>waste)<br>S 144 – Land Pollution – permitting land to be<br>used as unlawful waste facility   | Waste must be transported by an<br>appropriately licenced transporter<br>to a facility that is licenced to<br>accept waste  |   |  |  |
|             | S 148 – Duty to Notify   | Licenced disposal authority to<br>provide reciepts for all waste<br>received , reciept is to include date,<br>time and amount of waste disposed ,<br>ALL reciepts MUST be provided to<br>Taylors site management on their<br>return to site or when requested | Environmental incident reports<br>(indicating if notification was required).<br>Reviewed at Management Review.          |  |  |
|             | S 152 Offences for failure to notify of pollution incident   |   |   |  |  |
|             | Penalties<br>Most Serious Offences Causing Harm to the<br>Environment and Involving Wilfulness or<br>Negligence<br>Maximum penalty: Corporations \$5,000,000 (wilful) or<br>\$2,000,000 (negligence): Individuals \$1,000,000 or 7<br>years' imprisonment, or both, (wilful) or \$500,000 or 4<br>years' imprisonment, or both (negligence)  | Damage to corporate reputation /<br>image<br>Possible exclusion from tendering<br>for future environmental sensitive<br>projects  | Environmental inspections<br>Plant pre-start inspections and plant<br>maintenance<br>Compliance checks / audits against |  |  |
|             | Tier 2 (strict liability)<br>Corporations: \$1,000,000 and up to \$120,000 for each<br>day the offence continues.<br>Individuals: Up to \$250,000 and up to \$60,000 each<br>day the offence continues.<br>Tier 3 (penalty notice – on the spot fine)<br>\$1500 for corporation<br>\$750 for individuals<br>Failure to Notify a Pollution Inciden<br>Maximum penalty: corporations \$1,000,000;<br>individuals \$250,000 | Financial Cost to company and project stake holders   | Environmental Management Plan<br>Monitor compliance with DA concent   |  |  |

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| Legislation      | Key Requirements   | Relevance to Taylor                | Mechanism for Evaluating               | Link to legislation and relevant       |
| Legislation      | Ney Nequilements   | Construction Group                 | Compliance                             | web sites                              |
| POEO (General)   | The Regulation (among other things):   | Projects may require environmental | Planning - requirement for Licence set | https://www.google.com.au/url?sa=t&    |
| Regulation 2009  | 5 ( 5 5 7  | protection licences. (Refer to     | out in PEMP (if required)              | rct=j&q=&esrc=s&source=web&cd=1        |
|                  |  | Schedule 1 of the POEO Act)        | ,                                      | &cad=rja&uact=8&ved=0ahUKEwiQg         |
|                  |  |                                    | Audits against PEMP                    | 5ew4rzYAhWHE7wKHXjTDUUQFgg             |
|                  |  |                                    |  | nMAA&url=http%3A%2F%2Fwww.a            |
|                  |  |                                    |  | ustlii.edu.au%2Fau%2Flegis%2Fnsw       |
|                  |  |                                    |  | 2E&usg=AOvV/aw1RK7IXEv0dvW/Gf          |
|                  |  |                                    |  | FhkVRVb3                               |
|                  | sets out fees for environment protection notices   |                                    |  |  |
|                  | and noise control notices;   |                                    |  |  |
|                  | • sets out matters to be included by the EPA in its  |                                    |  |  |
|                  | statement of reasons for the grant or refusal of a   |                                    |  |  |
|                  | licence application;   |                                    |  |  |
|                  | <ul> <li>makes it an offence to provide faise of misleading<br/>information in relation to a licence application;</li> </ul> |                                    |  |  |
|                  |  |                                    |  |  |
|                  | <ul> <li>requires licensees to retain records used to</li> </ul>   |                                    |  |  |
|                  | calculate licence fees;  |                                    |  |  |
|                  | <ul> <li>prescribes certain matters when placed into water</li> </ul>  |                                    |  |  |
|                  | to be water pollution, and the methodology for testing   |                                    |  |  |
|                  | matter in waters;  |                                    |  |  |
|                  | • exempts certain water pollution from the water<br>pollution offence under the POEO Act 1997:                               |                                    |  |  |
|                  | allows the FPA to prohibit or regulate certain   |                                    |  |  |
|                  | activities that threaten the safety of drinking water that   |                                    |  |  |
|                  | is part of a public water supply;  |                                    |  |  |
|                  | declares certain bodies to be the ARA in relation to   |                                    |  |  |
|                  | certain activities for the purposes of the POEO Act  |                                    |  |  |
| POFO (Clean Air) | 1997;<br>This Regulation replaces the Clean Air (Domestic  |                                    |  |  |
| Regulation 2010  | Solid Fuel Heaters) Regulation 1997. Clean   |                                    |  |  |
| -                | Air (Motor Vehicles and Motor Vehicle Fuels)   |                                    |  |  |
|                  | Regulation 1997, Clean Air (Plant and  |                                    |  | http://www.austlii.edu.au/au/legis/nsw |
|                  | Equipment) Regulation 1997 and the   |                                    |  | /consol_reg/poteoar2002601/            |
|                  | Protection of the Environment Operations   |                                    |  |  |
|                  | (Clean Air) Regulation 2002  |                                    |  |  |

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| Legislation                               | Key Requirements  | Relevance to Taylor  | Mechanism for Evaluating  | Link to legislation and relevant   |
|   |   | Construction Group   | Compliance  | web sites  |
|   | In relation to motor vehicles, the regulation deals with the<br>emission of air impurities, including excessive smoke from<br>motor vehicles.   | Keep vehicles maintained to minimise<br>air pollution and avoid a "smoky vehicle"<br>fine.   | Environmental Inspection checklist<br>Pre-start checks on plant |  |
|   | In relation to Plant and Equipment, the regulation sets<br>maximum limits on emissions from activities and plant for a<br>number of substances, including chlorine, dioxins furans,<br>smoke, solid particles and sulphur.  | Maintain plant and equipment to<br>minimise air pollution<br>General Policy at Taylor Construction<br>Group is no burning off at site. |   | http://www.legislation.nsw.gov.au/fra<br>gview/inforce/subordleg+428+2010+ |
|   | In relation to the control of burning, the regulation controls<br>burning in the open or in incinerators in local government<br>areas, prohibits the burning of certain articles (including<br>tyres, paint and solvent containers, and certain treated<br>timbers), and imposes a general duty on persons to prevent<br>or minimise air pollution when burning in the open or in an<br>incinerator |  |   | whole+0+N?tocnav=y   |
| POEO (Noise Control)                      | This Regulation repeals and remakes, with minor   | Noise emissions from machinery and   | Environmental Inspection checklist                              |  |
| Regulation 2008                           | amendments, the provisions of the Protection of the   | activities.  | Pre-start checks on plant                                       | www.austlii.edu.au/au/legis/nsw/cons                                       |
|   | Environment Operations (Noise Control) Regulation 2000:   |  |   | or reg/poleocr2008693/   |
|   | <ul> <li>the sounding of sirens and similar devices and the</li> </ul>  |  |   |  |
|   | use of sound systems on vessels,  |  |   |  |
|   | the emission of noise from the engines or   |  |   | http://www.environment.nsw.gov.au/n  |
|   | exnausts of motor vehicles and vessels  |  |   | <u>oise/</u>   |
|   | motor vehicles and vessels.   |  |   |  |
|   | <ul> <li>the issue of defective vehicle notices and</li> </ul>  |  |   |  |
|   | defective vessel notices,   |  |   |  |
|   | the times during which it is not permissible to use   |  |   |  |
|   | certain articles if they emit noise that can be heard in  |  |   |  |
|   | <ul> <li>the inspection and testing procedures for the</li> </ul>   |  |   |  |
|   | purpose of determining noise emission levels of certail   |  |   |  |
|   | motor vehicles, motor vehicle accessories, vessels,   |  |   |  |
|   | articles or equipment   |  |   |  |
| POEO (Penalty Notices)<br>Regulation 2004 | I his Regulation:   | Environmental protection offences and  |   | 1  |
| 1090101011 2004                           | sets out the oriences under the Protection of the Environment Operations Act 1997 and related   | penalties, and a duty to notify of   |   |  |
|   | Acts and regulations for which penalty notices may  | environmental harm, apply to all   |   | www.austlii.edu.au/au/legis/nsw/cons                                       |
|   | be issued, and the amount of such fines;  | personnel working on projects.   |   | <u>or reg/poteonr2004710</u> /   |
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|  | ENVIRO  | NMENTAL -LEGAL -REG  | ISTER -01  |   |  |
|  | E   | nvironmental Legal Regis   | ster   |   |  |
| Legislation  | Key Requirements  | Relevance to Taylor<br>Construction Group  | Mechanism for Evaluating<br>Compliance   | Link to legislation and relevant web sites  |  |
|  | <ul> <li>specifies the organisations authorised to issue penalty notices for particular offences; and</li> <li>authorises the service of a penalty notice relating to an offence, applying to an owner of a motor vehicle or vessel, on the owner without naming the address of the owner and by leaving the penalty notice on that vehicle or vessel.</li> </ul> |  |  |   |  |
| POEO (Waste)<br>Regulation 2005  | Schedule 1 of the regulation sets out the types of waste to which waste tracking requirements apply.  | Certain chemicals used or generated<br>may be subject to tracking requirements<br>in this regulation. If waste tracking<br>requirements apply, waste dockets and<br>other records must be kept   | Periodic (monthly) review of project waste<br>dockets and records to ensure compliance<br>with tracking requirements.  | http://www.austlii.edu.au/au/legis/nsw<br>/consol_reg/poteor2005609/<br>www.environment.nsw.gov.au/waste                              |  |
| Protection of the<br>Environment Operations<br>Amendment (Scheduled<br>Activities and Waste)<br>Regulation 2008<br>(Note – part of 2005<br>Regulation) | This framework uses a mix of legislative, policy,<br>educative and economic tools to encourage waste<br>avoidance and the further recovery of resources. This<br>new framework includes:  | Altered definitions of waste categories<br>and disposal requirements (since April<br>2008).<br>If using recovered resources (eg<br>recycled asphalt, etc), ensure material<br>meets threshold contaminant<br>requirements (obtain from supplier prior<br>to use) |  | www.austlii.edu.au/au/legis/nsw/cons<br>ol_reg/poteor2005609/   |  |
|  | <ul> <li>Fewer and simpler licensing categories for waste;</li> <li>A streamlined waste classification system;</li> <li>New resource recovery licensing categories and resource recovery exemptions; and</li> <li>Clearer requirements for managing asbestos and clinical waste.</li> <li>The waste regulatory framework is administered under</li> </ul>         | includes 2011 amendment  |  | http://www.environment.nsw.gov.au/<br>waste/classification.htm<br>http://www.environment.nsw.gov.au/<br>waste/RRecoveryExemptions.htm |  |
|  | the principal legislation of the Protection of the<br>Environment Operations Act 1997 and the Waste<br>Avoidance and Resource Recovery Act 2001.  |  |  | http://www.legislation.nsw.gov.au/session<br>alview/sessional/subordleg/2011-151.pdf  |  |
| Protection of the<br>Environment Operations<br>(Underground Petroleum<br>Storage Systems<br>Regulation 2008)   | Regulation requires that underground petroleum storage<br>tanks must not be commissioned unless it has been<br>properly designed, installed and equiped, and integrity test<br>performed.   | The regulation generally will only apply<br>to TPG if it owns or operates sites with<br>Underground Petroleum Storage<br>Systems (UPSSs).  | If UPSSs are owned or operated by TCG,<br>extensive monitoring would be required in<br>accordance with an Environmental Protection<br>Plan specifically relating to the tank. Periodic<br>evaluations would be conducted agains the<br>Plan. | www.austlii.edu.au/au/legis/nsw/cons<br>ol_reg/poteopssr2008983/  |  |

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| l egislation  | Key Requirements  | Relevance to Taylor  | Mechanism for Evaluating   | Link to legislation and relevant   |
| Logiolation   | noy noquiremente  | Construction Group   | Compliance   | web sites  |
|   | A storage system must not be used unless groundwater<br>monitoring wells are installed on the storage site and these<br>are not to be installed unless properly designed.   | When working on sites with UPSTs,<br>ensure location is known, and that client<br>can provide details on locations of<br>groundwater monitoring wells, and other<br>required information |  | http://www.environment.nsw.gov.au/c<br>Im/upss.htm                           |
|   | The storage system must not be used unless an<br>environment protection plan is in place and must be used<br>in accordance with that plan. (for detail, of plan<br>requirements refer to clause 19) Note - this requirement will<br>apply to old tanks from June 2009.<br>Groundwater monitoring requirements on old storage tanks<br>will come be required from June 2011 (Clause 21)              |  |  |  |
|   | Loss detection procedures must be in place and acted<br>upon if any loss is detected (clause 22)<br>Records must be kept for at least 7 years   |  |  |  |
| Contaminated Land<br>Management Act 1997<br>Contaminated Land<br>Management Amendment<br>Act 2008 | The main objective of this Act is to establish a process for investigating and remediating land areas where contamination presents a significant risk of harm to human health or some other aspect of the environment. The amendment Act strengthens EPA/DECC powers in relation to contaminated land.  | Environmental Hygienist may be<br>engaged to provide advice, reports and<br>monitor activities when undertaking<br>work on contaminated sites is required.                               | If contaminated land is likely to be<br>encountered, measures for testing,<br>handling and disposing of contaminated<br>spoil are in the <u>Project Environmental</u><br><u>Management Plan</u> . Testing is undertaken<br>to ensure compliance. | http://www.austlii.edu.au/au/legis/nsw<br>/consol_act/clma1997238/           |
|   | Declare an investigation site and order and investigation   |  |  | http://www.austlii.edu.au/au/legis/nsw<br>/consol_act/clmaa2008318/sch1.html |
|   | <ul> <li>Declare a remediation site and order remediation to take place</li> <li>Agree to a voluntary proposal to investigate or remediate a site</li> </ul>  |  |  | <u>http://www.environment.nsw.gov.au/c</u><br>Im/                            |
| Contaminated Land<br>Management Regulation<br>2008  | <ul> <li>This Regulation prescribes a number of matters for the purposes of the <i>Contaminated Land Management Act</i> 1997, including:</li> <li>the content of site auditors' annual returns;</li> <li>the form to be used when reporting contamination; and</li> <li>the amount which the EPA may recover for its costs incurred in relation to investigation and remediation orders.</li> </ul> | Minimal relevance.   | N/A  | http://www.austlii.edu.au/au/legis/nsw<br>/consol_reg/clmr2008329/           |

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| Project :   | KYEEMAGH PUBLIC SCHOOL   |  |  | Date: 17.07.20   |  |
|   | ENVIRO   | NMENTAL -LEGAL -REG  | ISTER -01  |  |  |
|   | E  | nvironmental Legal Regi  | ster   |  |  |
| Legislation   | Key Requirements   | Relevance to Taylor<br>Construction Group  | Mechanism for Evaluating<br>Compliance   | Link to legislation and relevant web sites   |  |
| Environmentally<br>Hazardous Chemicals<br>Act 1985        | The purpose of this Act is to control chemicals that are<br>environmentally hazardous. DECC may make<br>chemical control orders (CCOs) with respect to<br>assessed chemicals or declared chemical wastes.<br>The CCOs may regulate the manufacture, processing<br>conveying, buying, selling or disposal of chemical or<br>declared waste. A CCO may prohibit activities in<br>relation to declared chemical wastes, except under the<br>authority of a licence issued by DECC.  | Certain chemicals used or generated<br>may be subject to handling and disposal<br>requirements in this Act. Chemicals<br>subject to this Act include Dioxin<br>wastes, Asbestos wastes, PCBs, and<br>organochlorine pesticide wastes.<br>It is unlikely that Taylor Construction<br>Group activities would generate<br>hazardous wastes covered by a CCO | Measures for identification, handling,<br>disposal of hazardous wastes are in the<br><u>Project Environmental Management Plan</u> .  | http://www.austlii.edu.au/au/legis/nsw<br>/consol_act/ehca1985373/   |  |
| Environmentally<br>Hazardous Chemicals<br>Regulation 2008 | <ul> <li>This Regulation:</li> <li>sets various fees in relation to assessments of technology and prescribed activities by the EPA and in relation to licences to carry on prescribed activities;</li> <li>specifies the matters to be included in applications for assessment of prescribed activities, in EPA notices about assessments of chemicals, and in EPA notices about applications for licences;</li> <li>prescribes the information to be included in registers under the Act.</li> </ul>                        | No relevance.  |  |  |  |
| Pesticides Act 1999                                       | <ul> <li>This Act promotes the protection of human health, environment, property and trade in relation to the use of pesticides. It is an offence under the Act to:</li> <li>Use a pesticide that harms or damages a person or property, a non-target animal or plant;</li> <li>Use a pesticide that harms a threatened specie or protected animal;</li> <li>Possess or use an unregistered pesticide without a permit, or contrary to the approved label;</li> <li>Fail to comply with the label or permit while</li> </ul> | Generally pest control would be<br>undertaken by specialist contractors.<br>If pesticides are applied by TPG<br>personnel, stringent storage, handling<br>and record keeping requirements apply.<br>Refer to the full Act and Regulations  | If pesticides are used, the requirements<br>would be documented in the Project<br>Environmental Management Plan for the<br>project. Regular audits would be<br>undertaken against the Plan, and pesticide<br>records would be reviewed once monthly<br>by the project manager. | www.austlii.edu.au/au/legis/nsw/cons<br>ol_act/pa1999120/<br>http://www.environment.nsw.gov.au/p<br>esticides/ |  |
|   | • Fail to comply with the label or permit while using a pesticide;   |  |  |  |  |

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| Project :  | KYEEMAGH PUBLIC SCHOOL   |   |   | Date: 17.07.20  |  |  |
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| Legislation  | Key Requirements   | Relevance to Taylor<br>Construction Group   | Mechanism for Evaluating<br>Compliance  | Link to legislation and relevant web sites                                  |  |  |
|  | <ul> <li>Keep a registered pesticide in a container without a label;</li> <li>Possess or use a restricted pesticide without authorisation.</li> <li>DECC may make pesticide control orders which prohibit use or possession of restricted pesticides</li> </ul>  |   |   |   |  |  |
| Pesticides Regulation<br>1995                        | This regulation requires that any person or<br>organisation applying a chemical in a public place<br>must apply this chemical as described in their<br>Notification Plan for Pesticide Use in Public Places.<br>The regulation makes it compulsory for all people who<br>use pesticides for commercial or occupational<br>purposes to make a record of their pesticide use.  | As above  | As above  | <u>www.austlii.edu.au/au/legis/nsw/cons</u><br><u>ol_reg/pr1995211/</u>     |  |  |
| Environmental Planning<br>and Assessment Act<br>1979 | The main objective of the EP&A Act is to ensure that<br>proper management and development of land is<br>undertaken incorporating the ecologically sustainable<br>development principles. To achieve this the EP&A<br>Act.  | Development Approval / Consent<br>required prior to construction as per<br>EP&A Act and as detailed in LEPs.                          | Compliance audits / checks against<br>development consent conditions (likely to<br>be done by client)   | <u>www.austlii.edu.au/au/legis/nsw/cons</u><br><u>ol_act/epaaa1979389</u> / |  |  |
| (EP&A Act)   | <ul> <li>Ensures that development consent is obtained prior to construction;</li> <li>Ensures compliance with planning consents and conditions associated with the consent</li> <li>Ensures environmental assessment is undertaken prior to development consent</li> <li>Has provision for penalties to be issued should development conditions be breached</li> <li>Also has Planning instruments such as Local Environmental Plans (LEPs)</li> </ul> | Need to comply with Conditions of<br>Consent once granted   |   |   |  |  |
| Fisheries Management<br>Act 1994                     | <ul> <li>The primary aim of this Act is to conserve, develop<br/>and share fisheries resources of NSW to benefit<br/>present and future generations. To do this the Act:</li> <li>Provides Fishery Management Strategies for<br/>commercial and recreational purposes</li> <li>Protects marine flora and fauna (eg. Mangroves);</li> <li>Describes dredging and reclamation approval<br/>process;</li> </ul>   | The Act applies to works that involve<br>dredging or working in water bodies<br>including estuaries, lakes, intertidal<br>zones etc.: | If dredging or other activities in fisheries<br>are undertaken, the requirements would<br>be documented in the Project<br>Environmental Management Plan for the<br>project. Regular audits would be<br>undertaken against the Plan. | <u>www.austlii.edu.au/au/legis/nsw/cons<br/>ol_act/fma1994193/</u>          |  |  |

|   | TAYLOR   |   |  |   |  |  |
|---|--|---|--|---|--|--|
| Project :   | KYEEMAGH PUBLIC SCHOOL   |   |  | Date: 17.07.20  |  |  |
|   | ENVIRO   | NMENTAL -LEGAL -REG   | ISTER -01  |   |  |  |
|   | E  | nvironmental Legal Regis  | ster   | -   |  |  |
| Legislation   | Key Requirements   | Relevance to Taylor<br>Construction Group   | Mechanism for Evaluating<br>Compliance   | Link to legislation and relevant web sites  |  |  |
|   | <ul> <li>Prevents the sale or possession of noxious fish and marine vegetation;</li> <li>Has provision for penalties to be issued for breaches of the requirements of this Act.</li> </ul>   |   |  |   |  |  |
| Marine Pollution Act<br>1987<br>Marine Pollution<br>Regulation 2006 | <ul> <li>This Act and the Marine Pollution Amendment<br/>Regulation 2006 oblige marine operations to</li> <li>Prevent pollution of marine environment by<br/>spillages from ships and transfer operations;</li> <li>Report/record oil or noxious liquid discharges<br/>from ships.</li> <li>Schedule 4 of the regulation provides Standards for<br/>treated sewage from vessels (faecal coliform,<br/>suspended solids and BOD)</li> </ul> | Relevant only when dredging or working<br>in a marine environment.  | If dredging or work in the marine<br>environment is anticipated, the measures<br>for monitoring compliance will be<br>documented in the <u>Project Environmental</u><br><u>Management Plan</u> .   | <u>http://www.austlii.edu.au/au/legis/nsw</u><br>/consol_act/mpa1987200/  |  |  |
| Waste Avoidance and<br>Resource Recovery Act<br>2001                | <ul> <li>This Act promotes waste avoidance and resource recovery by:</li> <li>Encouraging efficient use of resources in accord with ecologically sustainable principles;</li> <li>Promoting the "Avoid, reuse, recycle, dispose" hierarchy;</li> <li>Ensuring industry has a responsibility for reducing and dealing with waste;</li> <li>Providing penalties for breaches of this Act</li> </ul>  | Waste is generated during construction.<br>The principles of the Act are applied to<br>all aspects of construction to reduce<br>impacts from waste.<br>A Waste Management Plan may be<br>required to be prepared as part of<br>conditions of consent. | Regular environmental inspections using<br>standard checklist<br>Audit against Waste Management Plan (if<br>applicable) or against <del>Project</del><br>Environmental Management Plan   | www.austlii.edu.au/au/legis/nsw/cons<br>ol_act/waarra2001364/<br>http://www.environment.nsw.gov.au/<br>waste/   |  |  |
| Threatened Species<br>Conservation Act 1995                         | This Act outlines the protection of threatened species,<br>communities and critical habitat. An independent<br>Scientific Committee determines which species,<br>populations and ecological communities should to be<br>listed as endangered, vulnerable or extinct, and also<br>determines key threatening processes.   | Construction activities may be<br>undertaken in areas where threatened<br>species, communities and critical habitat<br>exit.  | If threatened species have been identified<br>in the Environmental Impact Assessment<br>(usually by client), the requirements would<br>be documented in the Project<br>Environmental Management Plan for the<br>project. Regular audits would be<br>undertaken against the Plan. | <u>www.austlii.edu.au/au/legis/nsw/cons</u><br><u>ol_act/tsca1995323/</u>                                       |  |  |
|   | Any animal, plant or habitat that is listed as<br>endangered, vulnerable or threatened must not be<br>harmed or damaged, unless planning approvals or<br>licences from DECC have been granted.   | The presence of these should be<br>identified by the Environmental Impact<br>Assessment process prior to<br>construction – usually identified by the<br>client  |  | <u>http://www.environment.nsw.gov.au/t</u><br><u>hreatenedspecies</u> /   |  |  |
| Native Vegetation Act<br>2003                                       | This Act regulates the clearing of native vegetation or<br>all land in NSW except for National Parks, State<br>Forests and reserves and urban areas. Native<br>vegetation is any species of vegetation that existed ir   | Approval is generally required for<br>clearing native vegetation, although<br>some exceptions apply.  |  | www.austlii.edu.au/au/legis/nsw/cons<br>ol_act/nva2003194/<br>http://www.environment.nsw.gov.au/v<br>egetation/ |  |  |

|   | TAYLOR   |  |   |   |  |  |
|---|--|--|---|---|--|--|
| Proiect :                                   | KYEEMAGH PUBLIC SCHOOL   |  |   | Date: 17.07.20  |  |  |
|   | FNVIRO   | NMENTAL -LEGAL -REG  | ISTER -01   |   |  |  |
|   | Fi   | wironmental Legal Regis  | stor  |   |  |  |
| Legislation                                 | Key Requirements   | Relevance to Taylor  | Mechanism for Evaluating  | Link to legislation and relevant  |  |  |
| Legislation                                 | Rey Requirements   | Construction Group   | Compliance  | web sites   |  |  |
| Noxious Weeds Act<br>1993                   | This Act requires occupiers of land to control noxious<br>weeds required under control categories specified in<br>relation to the weeds concerned. There are five<br>classes of noxious weeds:<br>Class 1 – State Prohibited Weeds: must not be<br>introduced/become established in NSW;<br>Class 2 – Regionally Prohibited Weeds: must not be<br>introduced or become established in parts of NSW;<br>Class 3 – Regionally Controlled Weeds: area that<br>these weeds occupy must be reduced;<br>Class 4 – Locally Controlled Weeds: impact on economy,<br>community, environment must be minimised;<br>Class 5 – Restricted Plants: must not be introduced or<br>allowed to spread from current areas. | Classified weeds that are present on<br>project sites or establish themselves<br>during construction must be eradicated. | If noxious weeds are present, regular<br>inspections should be carried out as part<br>of the environmental inspection process   | www.austlii.edu.au/au/legis/nsw/cons<br>ol_act/nwa1993182/<br>http://www.environment.nsw.gov.au/p<br>estsweeds/               |  |  |
| National Parks and<br>Wildlife Act 1974     | <ul> <li>Notices ordering the eradication of a classified weed may be served.</li> <li>Under this Act, NPWS is responsible for the care, control and management of all national parks, historic sites, nature reserves, reserves, Aboriginal areas and state game reserves. The Act governs various activities including:</li> <li>Protection of flora and fauna</li> </ul>  | Relates to any Aboriginal heritage or relics, and protection of flora and fauna.   | If works are undertaken in areas with<br>potential Aboriginal Heritage, These<br>should be identified in the Environmental<br>Impact Assessment and related<br>documents, and incorporated into the<br>PEMP. Regular inspections and audits<br>would be undertaken to ensure<br>compliance. | <u>www.austlii.edu.au/au/legis/nsw/cons<br/>ol_act/npawa1974247/</u>  |  |  |
|   | <ul> <li>Protection of Aboriginal heritage</li> <li>Licences and approvals to modify or destroy<br/>flora, fauna or Aboriginal heritage</li> <li>Penalties for breaches of the Act.</li> </ul>   |  |   | <u>http://www.environment.nsw.gov.au/li<br/>cences/</u>   |  |  |
|   | An Aboriginal Heritage Impact Permit (AHIP) is<br>required for any activity likely to have an impact on<br>Aboriginal objects or places.   |  |   | http://www.environment.nsw.gov.au/n<br>swcultureheritage/dec_consultation_0<br>80103_ReviewInterimReguirementsF<br>orAHIP.htm |  |  |
| National Parks and Wildlife Regulation 2002 | This regulation governs various activities under the <i>National Parks and Wildlife Act 1974</i> , including:  | Relates to any Aboriginal heritage or relics, and protection of flora and fauna.   | If works are undertaken in areas with potential<br>Aboriginal Heritage, These should be identified<br>in the Environmental Impact Assessment and<br>related documents, and incorporated into the<br>PEMP. Regular inspections and audits would<br>be undertaken to ensure compliance.       | <u>www.austlii.edu.au/au/legis/nsw/cons</u><br>ol_reg/npawr2002338/   |  |  |

| TAYLOR               |   |  |  |   |
|----------------------|---|--|--|---|
| Project :            | KYEEMAGH PUBLIC SCHOOL  |  |  | Date: 17.07.20  |
|                      | ENVIRONMENTAL -LEGAL -REGISTER -01  |  |  |   |
|                      | E   | nvironmental Legal Regis   | ster   |   |
| l egislation         | Key Requirements  | Relevance to Taylor  | Mechanism for Evaluating   | Link to legislation and relevant                                |
| Logiolation          |   | Construction Group   | Compliance   | web sites   |
|                      | <ul> <li>the regulation of the use of national parks and other areas administered by the NPWS (Part 2)</li> <li>the preservation of public health in Kosciuszko National Park (Part 3)</li> <li>licences and certificates (Part 4)</li> <li>the protection of fauna (Part 5)</li> </ul>   |  |  |   |
|                      | The regulation replaces the former NPW (Land<br>Management) Regulation 1995, the NPW<br>(Administration) Regulation 1995 and the NPW<br>(Fauna Protection) Regulation 2001.   |  |  |   |
| Heritage Act 1977    | The Heritage Act protects NSW's natural and cultural heritage including archaeological remains. If a site or place is of great significance, the Heritage Council car list it on the State Heritage Register. Items listed on the State Heritage Register are subject to the provisions of the <i>Heritage Act 1977</i> , which protects items of State heritage significance. Items 50 years or older are also considered heritage items and need to be managed as such. | Requirements will be triggered if there<br>are natural or culturally significant sites<br>or places. These should be identified<br>through the Environmental Impact<br>Assessment (EIA) process (eg – EIA,<br>REF) | If works are undertaken in areas with<br>potential European Heritage, these should<br>be identified in the Environmental Impact<br>Assessment and related documents, and<br>incorporated into the PEMP. Regular<br>inspections and audits would be<br>undertaken to ensure compliance. | http://www.austlii.edu.au/au/legis/nsw<br>/consol_act/ha197786/ |
|                      | development of or around any heritage item without  |  |  |   |
| Horitago Pogulations | approval from the Heritage Office.  | Minimal relevance  | l  |   |
| 2005                 | restates the minimum standards for the<br>maintenance and repair of items on the State<br>Heritage Register set in the previous regulation; and     provides for equitable and adequate funding for   |  |  |   |
|                      | heritage protection through cost recovery for<br>statutory processing   |  |  |   |
| Water Act 1912       | <ul> <li>An Act consolidating water rights, water and drainage and artesian wells. Provisions include:</li> <li>To obtain a licence to sink or alter an artesian bore;</li> <li>Not to waste water taken from dams, lakes, artesian wells and bores</li> <li>Not to unlawfully interfere with sub-surface water or obstruct its flow</li> </ul>   | Minimal relevance.   | N/A  |   |

|  |   | TAYLOR  |   |   |
|--|---|---|---|---|
| Project :  | KYEEMAGH PUBLIC SCHOOL  |   |   | Date: 17.07.20  |
|  | ENVIRO  | NMENTAL -LEGAL -REG   | ISTER -01   |   |
|  | E   | nvironmental Legal Regis  | ster  |   |
| Legislation  | Key Requirements  | Relevance to Taylor<br>Construction Group   | Mechanism for Evaluating<br>Compliance  | Link to legislation and relevant<br>web sites                             |
| Water Management Act<br>2000 and Water<br>Management (General)<br>Regulation 2004                              | <ul> <li>The Water Management Act 2000 is the main piece of water legislation in NSW and governs:</li> <li>Extraction of water from waterways and bores</li> <li>The construction of water storage and supply structures</li> <li>Development or building within the proximity of waterways</li> <li>A licensing system established under the Water Management Act 2000 allows for regulated usage o water resources</li> <li>The WMA Act consolidates the Water Act 1912 and the Rivers and Foreshores Improvement Act 1948.</li> </ul>  | Approvals may be required to undertake<br>water supply works, drainage works or<br>floodplain works   | If water is extracted from waterways, this<br>would be addressed in the EIA and PEMP.<br>Audits of the PEMP would be undertaken<br>to determine compliance  | <u>http://www.austlii.edu.au/au/legis/nsw<br/>/consol_act/wma2000166/</u> |
| Rivers & Foreshore<br>Improvement Act 1948   | This Act has been repealed and is replaced by the<br>Water Management Act 2000  | Nil - repealed  | N/A   |   |
| Com  | monweath Legal Requirements   |   |   |   |
|  |   |   |   |   |
| Environment Protection<br>and Biodiversity<br>Conservation Act 1999<br><b>(Commonwealth Act)</b><br>(EPBC Act) | <ul> <li>This Act aims to protect the environment, particularly matters of National Environmental Significance.</li> <li>Approval is required for actions that are likely to have significant impact on: <ul> <li>a matter of national environmental significance;</li> <li>environment of Commonwealth land (even if taken outside Commonwealth land);</li> <li>environment anywhere in the world if the action is undertaken by the Commonwealth.</li> </ul> </li> <li>Permits are required under the EPBC Act for: <ul> <li>certain activities in Commonwealth reserves;</li> <li>activities that affect listed species or communities in Commonwealth areas; cetaceans in Commonwealth waters and outside Australian waters;</li> <li>the import and export of wildlife.</li> </ul> </li> </ul> | Approvals may be required when<br>working in areas that may have matters<br>with national significance. Examples<br>may include:<br>* Work on Commonwealth land that may<br>have a significant impact on the<br>environment<br>Working in areas that are listed as:<br>*World Heritage property<br>* National Heritage places<br>* Listed wetlands (Ramsar)<br>* Threatened species or communities<br>* Migratory species<br>* Nuclear actions<br>* Marine Environments | Specific requirements for<br>complianceshould be addressed in<br>Environmental Impact assessments and<br>Project Environmental Management Plans.<br>Audits and inspections would be<br>undertaken against the stated<br>requirements. | http://www.austlii.edu.au/au/legis/cth/<br>consol_act/epabca1999588/      |

|   |   | TAYLOR  |  |  |
|---|---|---|--|--|
| Project :   | KYEEMAGH PUBLIC SCHOOL  |   |  | Date: 17.07.20                             |
|   | ENVIRO  | NMENTAL -LEGAL -REG   | ISTER -01                              |  |
|   | Er  | nvironmental Legal Regis  | ster                                   |  |
| Legislation   | Key Requirements  | Relevance to Taylor<br>Construction Group   | Mechanism for Evaluating<br>Compliance | Link to legislation and relevant web sites |
|   | The Act contains compliance and enforcement mechanisms<br>such as court injunctions, required environmental audits,<br>strict civil and criminal penalties, remediation of<br>environmental damage, liability of executive officers, and<br>publicising contraventions. |   |  |  |
|   | Other Requirements  |   |  |  |
| NSW Environmental<br>Management System<br>Guidelines Edition 2,<br>2007 | The guidelines are published by the NSW Government to<br>provide a framework for managing evnironmental issues on<br>construction sites   | Taylor Construction Group is seeking to<br>gain accreditation to the NSW EMS<br>Guidelines. The Integrated HSE<br>management system and the Project<br>Environmental Management Plan<br>templates have been designed and<br>prepared to meet these requirements |  |  |

\* Note: This Legal Register provides guidance on the applicability of certain Environmental Acts and Regulations at Taylor Construction Group and should not be seen as legal advice. Should legal advice be required, appropriate legal firms should be engaged.

### APPENDIX 7: PLANNING SECRETARY INCIDENT NOTIFICATION

WRITTEN INCIDENT NOTIFICATION AND REPORTING REQUIREMENTS

Written Incident Notification Requirements

1. A written incident notification addressing the requirements set out below must be emailed to the Planning Secretary at the following address: compliance@planning.nsw.gov.au within seven days after the Applicant becomes aware of an incident. Notification is required to be given under this condition A35 even if the Applicant fails to give the notification required under condition or, having given such notification, subsequently forms the view that an incident has not occurred.

- 2. Written notification of an incident must:
  - a. identify the development and application number;

b. provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);

- c. identify how the incident was detected;
- d. identify when the applicant became aware of the incident;
- e. identify any actual or potential non-compliance with conditions of consent;
- f. describe what immediate steps were taken in relation to the incident;
- g. identify further action(s) that will be taken in relation to the incident; and
- h. identify a project contact for further communication regarding the incident.

3. Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Planning Secretary, the Applicant must provide the Planning Secretary and any relevant public authorities (as determined by the Planning Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested.

- 4. The Incident Report must include:
- a. a summary of the incident;
- b. outcomes of an incident investigation, including identification of the cause of the incident;
- c. details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
- d. details of any communication with other stakeholders regarding the incident.

**APPENDIX 8: CONSTRUCTION TRAFFIC & PEDESTRIAN SUB PLAN** 

### CONSTRUCTIONTRAFFIC& PEDESTRIAN MANAGEMENT SUBPLAN



| Project:               | Taylors Construction – Kyeemagh Public School Upgrade |
|------------------------|---|
| Project Job Number:    |   |
| Project Address:       | 30A Jacobson Avenue & Beehag Street, Kyeemagh         |
| Proposed Work:         | Construction of new C14 Primary School                |
| Project Duration:      | 80 Weeks  |
| Prepared for:          | Taylors Construction                                  |
| Prepared by:           | Bridget Diggins – Secure Traffic Solutions            |
| Authors Accreditation: | 0051906031  |
| Date:                  | 23/06/2020  |

### CONTROL SHEET – SUMMARY UPDATES

- **1.** Insert new or revised sheets into the section of the TMP and remove/destroy any superseded sheets
- **2.** Record revision, date and brief description immediately after the TMP is updated

-

3.

| Revision | Date                       | Brief description of update                |
|----------|----------------------------|--|
| 0/1      | 14 <sup>th</sup> JULY 2020 | Initial draft to Taylor Construction Group |
| 0/2      | 17 <sup>th</sup> July 2020 | Amendments to CTPMSP                       |
| 0/3      | 22th July 2020             | Submission to Bayside Council              |
| 0/4      | 28th July 2020             | Submission to Transit Systems              |
| 0/5      | 28th July 2020             | Submission to Transport Management Centre  |
| 0/6      | 29th July 2020             | Amendment – Resume/Consultation records    |
| 0/7      | 17th Sept 2020             | Amendment – TfNSW/Consultation records     |
|          |                            |  |
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### 1 **PROJECT DETAILS**

### **1.1 Proposed Works**

The development is contained primarily to upgrade Kyeemagh Public School. The project will see new improved facilities and support the growing community by providing:

- New 2 storey teaching spaces and associated amenities
- New library
- New administration building
- New COLA
- New Hall
- New playing space, car park and all external works as documented
- Demolition of all existing buildings



### 1.2 Site Location

The Construction site is located at 30A Jacobson Avenue & Beehag Street, Kyeemagh which is located 12 Kilometres south of Sydney CBD west of Botany Bay. Kyeemagh is in the local government area of Bayside Council

Key roads that provide access to and from the site are M5 Motorway/M1 Motorway, General Homes Drive, Bestic Street, Mutch Avenue (Local Road) Beehag Street (Local Road) Jacobson Avenue (Local Road) and Tancred Avenue (Local Road)



**Beehag Street** is a local unclassified road under the care and maintenance of the council. It runs in a north-south alignment between General Homes Drive and Mutch Avenue. The road is configured as a two way undivided carriageway (one lane in either direction). Unrestricted kerbside parking is available along the road. Beehag Street also has a school zone restriction where the speed limit is 40k from 8am-9.30am and from 2.30pm – 4pm Monday to Friday.

**Jacobson Avenue** is a local unclassified road under the care and maintenance of the council. It runs in a east-west alignment between Owen Avenue and Bastic Street. The road is configured as a two way undivided carriageway (one lane in either direction). Unrestricted kerbside parking is available along the road. Jacobson Avenue also has a school zone restriction where the speed limit is 40k from 8am-9.30am and from 2.30pm – 4pm Monday to Friday.

**Mutch Avenue** is a local unclassified road under the care and maintenance of the council. It runs in a east-west alignment. The road is configured as a two way undivided carriageway (one lane in either direction). Unrestricted kerbside parking is available along the road. The speed limit is 50k.

**Tancred Avenue** is a local unclassified road under the care and maintenance of the council. It runs in a north-south alignment between Mutch Avenue and General Homes Drive. The road is configured as a two way undivided carriageway (one lane in either direction). Unrestricted kerbside parking is available along both sides of the road.

### 1.3 Purpose

The purpose of this Traffic Management Plan is to show how Taylors proposes to manage safety in regards to traffic during demolition, evacuation and construction, to meet the requirements of Council and RMS. This TMP is prepared for the purpose to consider the safety of construction site personnel, neighbours, road users and pedestrians. The purpose of this report is to detail traffic management for each stage and seeks to minimise the impact on public amenities and ensure safe practice in accordance with RMS Guidelines.

It is expected that this plan will be updated should any necessary changes to the currently proposed arrangements arise in the future.

### 1.4 Scope

The scope includes the provision for the:

- safe movement of vehicular and pedestrian traffic,
- protection of workers on the site and from passing traffic,
- provision for access to the property for delivery of materials and movement of work vehicles located within the limits of the project,
- design, construction, maintenance and removal of any necessary temporary roadways and detours,
- provision of traffic controllers,

- Installation of temporary signs, road markings, lighting and safety barriers.
- Proposed protection of pedestrians adjacent to the site.

It also covers excavation and reconstruction with best route or road corridor for all work activities, including the existing road and road shoulder that may be used for the temporary diversion of traffic, over the duration of the project.

### 1.5 Plan Objective

The key objectives of this Traffic Management Plan ("TMP") are :

- To satisfy the key legal requirements related to Traffic, Transport and Access to site
- So that the information can be applied to the planning and implementation of traffic control plans.
- To ensure the safety of its employees, contractors, the public,
- To maximise the value and outcomes of traffic monitoring activities
- To ensure no injuries or property damage to persons or their property on or surrounding the project.
- To actively monitor traffic impacts related to the demolition and construction works on surrounding area
- RTA personnel, pedestrians, cyclists and traffic,
- Minimise delays to traffic and consider the needs of all road users
- Maintain satisfactory property access,
- Minimise disruption to businesses,
- Minimise disturbance to the environment,
- To ensure compliance with relevant specifications and the RMS's Traffic Control at Work Sites Handbook Version 4
- To guide drivers through changed conditions guide them around the work site.

### 2 **CONSTRUCTION**

### 2.1 . Construction Activity

Major activities associated with the construction will include (in approximate order of occurrence):

| <u>Phase</u> | Activity  |
|--------------|---|
| Phase 1      | - Site establishment, hoarding erection, fencing, scaffolding               |
|              | pedestrian control etc  |
|              | <ul> <li>Decommissioning of existing services</li> </ul>                    |
|              | <ul> <li>Demolition of existing structures on the site.</li> </ul>          |
|              | <ul> <li>16-24 trucks per day for Demolition</li> </ul>                     |
|              |   |
| Phase 2      | - Bulk Excavation   |
|              | <ul> <li>Services diversions (as applicable)</li> </ul>                     |
|              | <ul> <li>4-6 truck per day for Excavation</li> </ul>                        |
|              |   |
| Phase 3      | <ul> <li>Crane Erection, construction of new buildings including</li> </ul> |
|              | Concrete boom pump concrete deliveries.                                     |
|              | <ul> <li>Concrete pours only 4 times during the project</li> </ul>          |
|              | - Up to 30 trucks per day   |
|              |   |
| Phase 4      | <ul> <li>Mobile cranes, material deliveries</li> </ul>                      |
|              | - 4-6 trucks per day  |
|              |   |

During construction activities on the Kyeemagh site, the school will still be in operation. Vehicles entering/exiting will be escorted by traffic controllers to provide extra safety. Residents shall be advised of demolition, excavation, and construction activities.

Building operations such as brick cutting, washing tools or brushes and mixing mortar shall not be carried out on public roadways or footpaths or in any locations which could lead to the discharge of materials into the storm water drainage system.

All building materials and any other items associated with the development shall be stored within the confines of the property. No materials shall be stored on Council's footpath, nature strip, or road reserve without prior Council approval.

### 2.2. Site Working Hours

Monday – Friday 7am – 5pm Saturday: - 8am – 1pm No work permitted on Sunday or Public holidays. Remediation works may require additional hours on a Saturday subject to authorisation. No deliveries between 8am – 9.15am and between 2.30am and 3.30pm. For all deliveries contact Taylors site management Steve Ziaziaris 0413 182 641. A two-way system with a UHF channel to be nominated to assist in accepting deliveries.

Rock breaking, rock hammering, sheet piling, pile driving, and similar activities may only be carried out between the following hours:

- (a) 7am 5 pm, Monday to Friday
- (b) 8am to 1pm, Saturday

Noise from construction activities shall comply with the Protection of the Environmental Operations (Noise Control) Regulation 2000.

### 2.3 Works / Loading Zones

All works associated with this development shall take place onsite, and separate Council / RMS approved works zone applications are not required.

### 2.4 Construction Vehicles movement/Work Zones

Adequate advanced warning and directional signage will be placed around the site. This will direct drivers to the construction site and inform other drivers and pedestrians of upcoming works on their route. Authorised Traffic Controllers shall be on-site ensuring controlled entry and exit in and out of site. This shall ensure movements shall not affect traffic flow or endanger pedestrians, by giving way to pedestrians and cyclists before trucks enter and exit site.

All truck movements shall be carried out taking into consideration the surrounding building and roads. Adequate measures to reduce severity/seriousness of incidents shall be put in place to improve conditions.

All drivers of trucks and construction vehicles will be given this TMP and will be aware of the truck and vehicle routes and advised to channel into staff prior to delivery.

All plant and heavy machinery will be placed or parked within the site. No plant or machinery will be placed on the street. No dog trailer or over size vehicle to be left on local roads unless approval has been obtained for a one-off occasion from Rockdale Council. During demolition and excavation all construction vehicles will be loaded within the site, where possible for the duration of the project trucks will enter through Entry/Exit Gates on Beehag Street and Jacobson Avenue (shown in Figure 2) and TCPs at back of TMP. Work vehicles will arrive and depart from the site access gates located on Beehag Street & Jacobson Avenue in a forward direction. All trucks arriving and departing the site are to be under the instruction of traffic controllers and leave site in a safe and suitable manner.

All trucks arriving to site will be pre-booked by Taylors management. The proposed work will involve a degree of pedestrian management when deliveries and all activities arrive to site and if these affect the footpath, a Traffic controller will be required to put temporary barriers in place to stop pedestrians when work vehicles are accessing work site.

No materials, equipment, structures or goods of any type are to stored within 5m of the trunk of a tree.

Dust control measures are to be implemented during all periods of earth works, demolition, excavation and construction to minimise the dust nuisance on surrounding properties. The council guidelines for Controlling Dust from Construction Sites and Section 126 of the Protection of the Environments Operations Act 1997 to be utilised.

No materials, skip bins, concrete pumps, cranes, machines or temporary signs shall be stored on the council's footpath, nature strip, park or reserve without the prior approval of Council under section 138 of the roads act 1993.



Figure 2

All exiting trucks shall be:

- Loaded to their prescribed weight limits.
- All trucks will be covered by tarpaulin or like prior to leaving the site as required.
- All vehicles leaving the site must be free of mud or any other debris. Drivers of vehicles that exit the site must check their vehicles are clean prior to exiting. It is the responsibility of each driver to confirm their vehicles are clean prior to exiting site.

Taylor Construction will ensure that:

- No vehicle shall make deliveries outside Council's approved DA site hours
- All delivery vehicles will arrive at pre-arranged times to site.
- No queuing or marshalling of trucks shall occur for this site. Any vehicles that arrive to site that are unable to be accommodated as outlined in this CVPPM shall be sent back to their origin.
- All vehicles arriving to the construction site shall strictly adhere to the speed limit.
- This CTMP and all relevant plans shall be given to all transport companies associated with the site and expected to pass relevant information to its personnel and truck drivers arriving to site.

Construction vehicles required by the proposed construction activities include:

- Heavy Rigid Vehicles (12.5HR);
- Multi Combination Vehicles (Truck & Dog);
- Infrequent use of semi-trailers for special deliveries;
- Concrete pumper and agitator vehicles during building works;
- Small to medium sized trucks for other deliveries.

At this stage the use of oversized and over mass vehicles is not foreseen. Nevertheless, if it is required at a later stage, approval for each occasion would be sought from the relevant approval authority.

During the strip out phase, it is estimated up to some 16-24 truck movements per day would be taking demolition material from the site.

During the construction phase, peak activity would occur during concrete pours with a number of concrete trucks per day requiring to delivery concrete mix to the site. There is approximately 4 major pours, approximately 30 movements per day.
## 2.5 Arrival & Departure of Vehicles

Adequate advanced warning and directional signage will be placed around the site. This will direct drivers to the construction site and inform other drivers and pedestrians of upcoming works on their route.

Authorised Traffic Controllers shall be on-site ensuring controlled entry and exit in and out of site. This shall ensure movements shall not affect traffic flow or endanger pedestrians, by giving way to pedestrians and cyclists before trucks enter and exit site.

All truck movements shall be carried out taking into consideration the surrounding building and roads. Adequate measures to reduce severity/seriousness of incidents shall be put in place to improve conditions.

## VEHICLES - Arrival Route to site

It is illegal to park a truck exceeding 4.5 tonnes on a roadway for more than one (1) hour unless signs are installed allowing such and illegal to barricade/ reserve a section of roadway without the prior approval of Council. Vehicles shall leave site in a forward direction with the assistance of Authorised Traffic Controllers. Under no circumstances will vehicles be permitted to leave site in reverse.



Figure 3

• <u>Truck Arrival Route (Arriving General Homes Drive/Bestic Street/Mutch</u> <u>Avenue/Beehag Street – Site/Jacobson Avenue - Site</u>

Trucks travelling on General Homes drive can enter turning left or right into Bestic Street.

Follow Bestic Street for approximately 300m

Turn right onto Mutch Avenue

Turn right into Beehag Street to Kyeemagh Public School and enter site

## **Departure Route from Site**

• <u>Truck Departure Route (Beehag Street/General Homes Drive /or Jacobson</u> <u>Avenue/ Tancred Avenue/ General Homes Drive).</u>

Exit site and follow Beehag Street,

At the T-intersection turn left onto General Homes Drive to required destination

Exit site from Jacobson Avenue, Travel north to Tancred Avenue,

Turn right into Tancred Avenue,

At the T-intersection turn left onto General Homes Drive to required destination



## **Construction Vehicles and Plant accessing work site**

All loading and unloading of materials shall be done within the site. Trucks are not to queue on the driveway or on public roads; traffic controllers shall manage the ingress and egress. Trucks unable to immediately enter site shall que at a remote location. All drivers of trucks and construction vehicles shall be issued this CTMP and shall be made aware of the truck and vehicle routes.

All plant and heavy machinery will be placed or parked within the site. No plant or machinery shall be placed on the street. No vehicles to be left on local roads unless approval has been obtained for a one-off occasion from Council. All vehicles, plant, and equipment shall be operated in accordance with NSW Road Rules 2014.

## 3. DRIVERS CODE OF CONDUCT

This drivers Code of Conduct for Heavy Vehicles is to ensure that drivers adhere to the designated transport routes, and outline procedures to ensure that drivers implement safe driving practices, particularly when entering/exiting truck routes.

All Employees and contractors are made aware that responsible driving and adhering to the code is a condition of employment at Kyeemagh Public School upgrade. All drivers are trained in the Code of Conduct and audits of the compliance with the Code are conducted. All drivers reported or found to be acting in a manner contrary to the Code will be subject to disciplinary action.

## 3.1 General Requirements

Heavy vehicles drivers hauling from Kyeemagh Public School must:

- Hold a valid drivers licence for the class of vehicle being operated.
- Operate the vehicle in a safe manner with and external to the site.
- Comply with the direction of authorised site personnel when within the site.

## 3.2 Heavy Vehicles Speed

Drivers are to observe the posted speed limits on all public roads in particular all drivers are advised to proceed near the school or school buses at 40km/h, with speed adjusted appropriately to suit the road environment and prevailing weather conditions to comply with the Australian Road Rules. Vehicles to proceed at 10km/h while being escorted in/out of work site.

## 3.3 Heavy Vehicle Control

In order to minimise the impact of noise from truck transport, the following controls apply to truck operators at Kyeemagh Public School Upgrade

- Compression brakes not to be used in the vicinity of the School
- Tailgates must be locked and secured to avoid noise and spillage
- Always observe the posted speed on site and the local road network
- No tail gaiting is permitted a 3 second gap is to be observed at all times
- Equipment to be used must be fit for purpose
- Drivers to obey the loading, dispatch and product transportation times

## 3.4 Load Covering

Loose material on the road surface has the potential to cause road crashes and vehicles damage. All loaded vehicles entering or leaving the site are effectively covered for the duration of the trip. The load cover must be removed upon arrive at the site. All care is to be taken to ensure that all loose debris from the vehicle body and wheels is removed prior to leaving the site and again after uploading. Drivers must ensure that following the tipping that the tailgate is locked before leaving the site. Taylors management is to monitor loose material on the side of haulage route from the site and take appropriate action regularly.

## 3.5 Cleanliness

All loaded vehicles are to be inspected prior to leaving the site for cleanliness. Any materials that could fall on the road should be removed prior to leaving the site.

## 3.6 Vehicle Departure and arrival

Taylors to plan trucks arrival and departure to avoid peak periods. To alleviate public concern and increase road safety, heavy vehicles leaving the site should be separated and it is important for all drivers to be aware of the requirement to avoid convoys leaving the site. Taylors to plan deliveries to avoid school peak hours.

## 4. Dust

Taylors Construction is responsible for the mitigation of all dust generated on site or as a result of undertaking the works. Taylors is to allow for the provision of 'sticky mats', floor protection, wetting down, cleaning and the like to ensure that dust is not tracked through the building or the building surrounds. Taylors shall protect all existing services from dust by covering or sealing the likes of existing air conditioning units, ductwork, intakes, distribution boards, and the like. This extends to providing and maintaining a dust free environment for the installation of any communications and telephone equipment,

## 5. Fencing, Barriers & Hoarding

Temporary fencing shall be erected around all work. Traffic controllers shall be present to manage all pedestrian movement with the erecting of the hoarding. Where the hoarding is to be erected over the footpath or any public place, the approval of Council must be obtained prior to the erection of the hoarding.

Any openings in the existing perimeter fencing shall be secured with fencing and hoardings to keep the site secure and any new fencing shall be temporary (such as cyclone wire) and at least 1.8 metres high. All fencing is to be maintained for the duration of construction to ensure that the work area is secured.

A sign shall be displayed on the site indication the name of the person responsible for the site and a telephone number of which that person can be contacted during and outside normal working hours, or when the site is unattended.

The sign must be erected in a predominant position shall display the following:

- Name, address, and telephone number of the principle certifying authority for the works
- Name of principle contractor (if applicable) for any building work and a telephone number on which that person may be contacted out of hours
- Unauthorised access to the work site is prohibited

No portion of the proposed fence, including the footings, is to encroach beyond the boundaries of the subject property.

Alternatively, documentary evidence that the owner of the adjoining property has no objection to the construction of the party fence wall on the common boundary between these properties is to be submitted to Council prior to the issue of a Construction Certificate

## 6. Waste Management and Recycling

A formal Construction Waste Management Plan will be produced by Taylors prior to works commencing. All material that cannot be recycled or reused will be disposed to an approval landfill facility. Waste will be minimised and that generated will be separated to maximise recycling. The highest waste production will be will be during the demolition of existing buildings onsite.

Dangerous goods (such as petrol, diesel, oxy-acetylene, oils, etc) will be stored in a lockable compound with sufficient ventilation in accordance with relevant codes of

practice and standards. Material safety data sheets on all flammable and potentially harmful liquids will be provided by the contractor undertaking the works.

## 7. Removal and storage of Rubbish or spoil.

All industrial rubbish bins will be stored on site and in a position for easy access for removal by trucks. All removal trucks will have the load covered by tarpaulin or other means to secure load. All excavations and backfilling shall be executed safely and in accordance with the relevant Australian Standards.

Council expects demolition and excavated material to be reused and/or recycled wherever possible. No materials shall be placed, dumped, of left on any Council road or footpath. Removed or damaged street furniture, including parking and street signs, shall be replaced immediately. Copies of demolition and construction waste dockets that verify the facility that received the material for recycling or disposal and the quantity of waste received, must be retained on site at all times during construction.

## 8. Responsibility

It is the responsibility of Taylor Constructions to ensure that these traffic measures are disseminated, implemented and maintained in accordance with the principles in the project, Occupational Health, Safety & Rehabilitation Management Plan: and; it is the responsibility of every worker involved with this work site to comply with the guidelines set down in this plan

## 9. Emergency Response

- Secure Traffic Solutions will provide traffic control by qualified traffic controllers for emergencies such as accidents and spillages on the maintained network.
- Secure Traffic Solutions will use an appropriate standard plan drawn from the RMS Traffic Control at Work Sites Manual (Appendix D), adjusting it as needed to suit the site conditions.
- For all other planned and scheduled maintenance and other works under the contract, Secure Traffic Solutions will prepare Traffic Control Plans as required.
- Nearest Police Station Hurstville Police Station (02) 9375 8599
- Nearest Fire Station Kogarah Fire & Rescue (02) 9587 0878
- Nearest Hospital St George Hospital, (02) 9113 1111
- Nearest Medical Centre Myhealth Medical Centre 02 9051 2882
- All other Emergency numbers CALL 000

## 10. Time Management

Taylor Construction aims to meet its time related obligations. Among them are:

- Notifying emergency services and relevant sections of the community and transport industry of work which results in significant traffic disruption.
- Notifying residents and businesses affected by disruption to property access or by night works in built up areas. A letter will:
  - $\circ$   $\,$  be "letter-box-dropped" at least three Business Days before the proposed date and
  - Detail the dates and times of the proposed access restrictions and contact details.
  - Performing work and Services only in the times permitted.
- Lodging early as possible (at worst no less than 10 Business Days before the work) a road occupancy application. See RTA G10 (2.6). Noting, however, the exemptions for emergencies and hazards set down at RTA G11 (8).
- Promptly advising the TMC of delays to traffic which are, or are anticipated to be, longer than 15 minutes.

## 11. PROPOSED STRATHEGY OF TRAFFIC MANAGEMENT TO ENSURE ROAD SAFETY & NET-WORK EFFICIENCY

#### A. IMPACTS ON GENERAL TRAFFIC - Road/Lane Closure

- The proposed works will not require any road or lane closures and should not delay general traffic. If at any stage the work does require these closures all permits will be applied for through Council prior to the commencement of works. If a partial road closure, temporary driveways or mobile cranes are required appropriate application will be made to Council prior to commencement of such works.
- No roadworks will be undertaken on state roads or within 100 m of traffic signals for this project. If the need occurs to undertake such works a Road Occupancy Licence will be made to NSW Transport Management Centre and a copy will be provided to Council.
- Approval from RMS will not be required for any work activity as vehicles are exiting the job site in a forward direction and no stopping of traffic required near traffic signals.

- All traffic control plans (TCPs) associated with this CTMP will comply with relevant Australian Standards and RMS Traffic Control at Worksites Manual.
- The works shall not impact the local public transport network. The proposed construction activities would not require the relocation of any existing bus stops or bus routes in order to accommodate the construction activities.

## **CONSTRUCTION WORKER TRANSPORTATION STRATEGY**

## B. Parking for Site Workers

- While a limited amount of car parking will be available for construction personnel, workers will be encouraged to use public transport when travelling to and from the site. It is noted that there is a bus route on Beehag Street. 479 bus takes you to and from Rockdale train station.
- There is all day street parking on all surrounding roads.
- It is recommended that an onsite tool drop off and storage facility is included in the construction site management such that construction personnel can drop tools to the site by vehicle and then store them on site for the duration of works, thus enabling them to travel on public transport without needing to transport heavy tools each day.

## C. PUBLIC TRANSPORT.

• The existing public transport servicing the site is 479 bus which runs from Rockdale to Kyeemagh. The 479 bus has 25 stops departing from Rockdale train station on Geeves Avenue Stand C and ending on Bay Street near Trafalgar Street. The service normally starts operating at 18.07 and ends at 18.38. The map of the bus network near the site is provided below:



## D. Impact on Pedestrians

- When the works are affecting footpaths traffic controllers will ensure to provide an exclusion zone around the work area.
- Only authorised personnel will be permitted within the building site unless accompanied by site management, if not inducted to the site. Whilst within the confines of the building site, all personnel will attire in correct PPE to ensure that they are visible to moving traffic
- When trucks are entering/exiting the worksite, RMS accredited traffic controllers will be employed to manage pedestrian movement and temporary stop all pedestrians while there is truck movement occupying the footpath. If any work is taking place on the footpath, traffic controllers will have to ensure there is a pedestrian pathway in place to direct pedestrians safely around the work area. Outside of construction hours the footpath will be free of any barricades or building materials.



Footpaths surrounding work site

## E. Impact on Cyclists

The works will not cause any disruption to the local cyclist network. If the works impact the road network traffic controllers will ensure to implement a safe, viable and clear alternative for cyclists. The proposed construction activities would not require the relocation of any existing cycle lane. Traffic controllers may need to temporary stop cyclists when work vehicles are entering/exiting the work site. No detour route will be required.

## F. Emergency Vehicle

 The construction activities of the proposed project would not adversely impact on the accessibility or operation of emergency services for access to the site or surrounding properties as all existing roads and individual property accesses would remain open and accessible during the construction activities associated with the site works. If the case, any emergency vehicle required for site will be given priority and when practicable, assisted by Authorised Traffic Control.

## G. Access to properties and Noise

- The works will not affect access to properties. Regarding noise impacts, Taylors Construction will strive to keep all noise associated with the works is kept to a minimum. Likewise, no noise will be made outside the approved hours for site.
- Where there is a strong community reaction to noise associated with demolition, excavation and/or construction, council may require respite periods by restricting the hours that the specific noisy activity can occur.
- If this is imposed, council will consider
   Times identified by the community when they are less sensitive to noise.
   If the community is prepared to accept a longer period of construction in exchange for restriction on construction hours.
- Prior to commencement of the site preparation works, it is recommended that Taylors Constructions inform the local community regarding the traffic control and management arrangements that will be implemented and the timing/duration of works. It is envisaged that the requirements for community consultation will be set out in the conditions of consent, and all the community notification.
- Notification of any work affecting any properties or residents will be notified in the form of a letter will be made by letter box drop two weeks prior then again, the day before the work starts.

## 12. Traffic Controllers

RMS Accredited Traffic Controllers. will be on-site ensuring controlled entry and exit into site that does not affect traffic flow or endanger pedestrians by giving way to pedestrians and cyclists before trucks enter and exit site. Traffic controllers will wait for a suitable gap in traffic and pedestrian movement before assisting construction vehicles entering or leaving the site.

## 13. Community & Motorists Consultation/Notification

A Taylors representative is available to meet with any neighbours affected by the site works to discuss the proposed measures mentioned within this construction traffic management plan. Notification of construction activity will be sent to properties near the work site. This notification in the form of a letter will be made by letterbox drop two weeks prior to work commencing and again the day before works commences. Temporary advance warning signs will advise motorist of their approach to the work site. Regular consultation to be held with Council's manager for social and community services

## 14. **Permits and Road Occupancy Licence**.

A work zone permit will need to be applied for through council where any work zones are required for deliveries or loading zones outside of the site boundary. A Road Occupancy Licence will not be required for this job as vehicles enter/exiting on Beehag Street and Jacobson Avenue which are not RMS roads. The builder and traffic control company will adhere to any and all conditions expressed on any licences required.

## 15. Workplace Health & Safety

Taylors Construction will access the risk and will incorporate the traffic control plans and the traffic management plan into the site safety plan.

This CTMP must be included in site inductions to ensure all new employees are aware of the construction management obligations.

## 16. Traffic Control Plans

Traffic control plans, Vehicle movement plan and pedestrian movement plans for this project are included in this document. The TCP is a diagram showing signs and devices arranged to warn traffic and guide it around, past or, if necessary through the work site or temporary hazard. Taylors will ensure authorised traffic controllers will be present on site to assist access of trucks in and out of the site ensuring the safety of pedestrian's, cyclists and all other vehicles. The Land uses surrounding the site are residential. The site is located within close proximity to the School which attracts significant vehicles during morning and afternoon drop off and pic up periods during the week.

The TCPs were designed to address the following issues where applicable:

- Use of traffic control devices
- Speed limit requirements
- Provisions for pedestrian traffic and their safety
- Provisions for cyclists and their safety
- Provision for vehicle and plan movement
- Parking restrictions and parking facilities
- Provision for trade vehicles and plant movement
- Informing all site personnel of any high-risk areas, and
- Providing adequate signage within the Construction site for access and egress of vehicles.

## 17. Monitoring and Review

Monitoring and review is important throughout the TMP process (both preparation and implementation) to ensure that the TMP remains current and addresses all risks at the worksite. After the TMP has been implemented, a review should be undertaken to ensure that it is operating as expected. Schedule further reviews as the program progress, to ensure that the plan continues to operate as expected.

## **Daily Inspections**

The monitoring program generally incorporates daily inspections:

- Before the start of work activity on site
- During the hours of work
- Closing down at the end of the shift period
- After work hours

Provide a template for a daily inspection register allowing indication of:

- When traffic controls were erected
- When changes to controls occurred and why the changes were undertaken
- Any significant observations associated with the traffic control and their impacts on road users or adjacent properties

Collecting information is particularly important in the event of an incident, in case legal proceedings result.

## **TMP Review & Improvement**

Outline a process to facilitate continuous improvement which may include debrief meetings to discuss any issues or risks associated with the plan.

Ensure the TMP is kept up to date taking into account changes in traffic volumes, vehicle types, the road environment, work practices, standards, and jurisdictionally specific legislation.

Review of the TMP will be required if any on-site changes occur (with the exception of repositioning of traffic control devices) by a person appropriate qualified in the relevant jurisdiction.

A copy of all documentation relating to the endorsement of the changes must be held on-site by the person managing the works.

Where there are non-compliances identified the procedure should have a mechanism for the issuing of a formal corrective action. Corrective actions should be closed out and a registered as such in accordance with the organisations normal practice.

## **18.** Out of Working Hours Contacts

Steve Ziaziaris – Senior Project Manager – Taylor Constructions 0413 182 641





| Surname | First Name | Contractor Name             | Certificate<br>Number | Expiry Date |
|---------|------------|-----------------------------|-----------------------|-------------|
| Diggins | Bridget    | Secure Traffic<br>Solutions | 0051906031            | 24-01-2022  |
|         |            |                             |                       |             |
|         |            |                             |                       |             |
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|         |            |                             |                       |             |



#### Appendix B– Resume

Name: Bridget Diggins

Phone: 0416 430 138

Address: PO Box 760, Manly, NSW 2095

#### **Qualifications**

Prepare a Work Zone Traffic Management Plan Bachelor of Arts – Information Systems Management

#### EMPLOYEMENT HISTORY

Secure Traffic Solutions 23/10/2019 - present

Managing Director

Commercial TC – 19/01/2017 – 23/03/2020

**Operations Manager** 

The Traffic Marshall – 20/05/2015 - 17/01/2017

**Operations Manager** 

Downer Australia

Traffic Management Manger 2008 -2015

#### WORK EXPERIENCE

- I have worked in Traffic Management for the past 15 years designing traffic management plans in accordance with Australian Standard AS 1742.3whilst also utilizing the RTA Manual for Traffic Control at Worksites as a guideline.
- Planning for all aspects of Traffic Management following OH&S guidelines and legislation.
- Submit plans and appropriate paperwork to the RMS Transport Management Centre to obtain Road Occupancy License.
- Liaise with Council, buses and correspond with a wide variety of stakeholders.
- Submitting TMP's (Traffic Management Plans) & TCP's (Traffic Control Plans) to Council/RMS/Buses etc for all works within the contract.
- Site inspections
- Allocation of traffic control labour hire to all work projects



## Appendix C – Consultation Record

## Post Approval Consultation Record

| Identified Party to<br>Consult:                        | Bayside Council, TfNSW - Transport Management Centre, Transit<br>Systems   |
|--|--|
| Consultation type:                                     | Telephone conversation/email consultation  |
| When is consultation required?                         | Prior to commencement on project.<br>Permits maybe required later after commencement/during con-<br>struction when affecting roadway outside site boundary |
| Why  | Condition A8   |
| When was consulta-<br>tion scheduled/held              | 22/07/2020, 28/07/2020, 29/07/2020   |
| When was consulta-<br>tion held                        | 22/07/2020 – Bayside Council, 28/07/2020 TfNSW, 28-07-2020<br>State Transit  |
| Identify persons and<br>positions who were<br>involved | Bridget Diggins – Secure Traffic Solutions,<br>Almustafa Kamil – Bayside Council, Chantel Tu – TfNSW, Adrian<br>Prichard –Transit Systems                  |
| Provide the details of the consultation                | Introduction to project,<br>Submit Construction Traffic & Pedestrian Management Sub Plan<br>Obtain approvals.  |
|  | Obtain advice on what permit applications need to be submitted prior to commencing work.   |
|  | Introduce relevant team members, our position identify any issues to be discussed.   |
|  |  |
| What specific mat-<br>ters were dis-<br>cussed?        | Notification of upcoming work<br>Permits and approvals   |
| What matters were resolved?                            | Permit application process<br>Council Approval<br>Transit Systems approval   |
| What matters are unresolved?                           |  |
| Any remaining<br>points of disagree-<br>ment?          | No at this time  |
| How will SINSW ad-<br>dress matters not<br>resolved?   |  |

#### Appendix D – BAYSIDE COUNCIL CORRESPONDENCE

From: Almustafa Kamil <Almustafa.Kamil@bayside.nsw.gov.au> Date: Wed, 29 Jul 2020 at 14:12 Subject: FW: Construction Traffic & Pedestrian Management Sub Plan - Kyeemagh Public School To: Bridget Diggins <bridget@securetrafficsolutions.com.au> Cc: Karim Elazar <Karim.Elazar@bayside.nsw.gov.au>, Josh Ford <Josh.Ford@bayside.nsw.gov.au>

Hi Bridget,

The submitted Traffic Management Plan (dated 23/06/2020) and the Traffic Control plan (dated 28/05/2020) are acceptable and satisfy council requirement.

In regards to the request of occupying 1 carspace in both side of the proposed construction site entry at Jacobson Avenue, you will need to fill page 1,2 and 3 of the Work Activates on Council Sites Application (Attached).

Please fill it and email it back to me, so I can lodge it on your behalf. Since the proposed works related to public/government development, you will only be charged the application fee (\$141.00). An invoice will be sent to you after lodging the application.

Don't hesitate to contact me should you have any questions.

Kind Regards,

Almustafa Kamil Public Domain Engineer

444-446 Princes Highway, Rockdale NSW 2216

- **P** (02) 9366 3817
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#### Appendix E – TRANSIT SYSTEMS CORRESPONDENCE

On Wed, 29 Jul 2020 at 09:35, Adrian Prichard <APrichard@transitsystems.com.au> wrote:

Hi Bridget

Transit Systems raise no objections. Please ensure buses take preference

at Traffic control site on Beehag St site entrance.

Regards

# **Adrian Prichard**

**Network Planner** 

T: (02) 8778 5889 M: 0490 121 539

E: <u>APrichard@transitsystems.com.au</u>

A: Lot 2 Airfield Drive, LEN WATERS ESTATE NSW 2171

#### www.transitsystems.com.au Error! Filename not specified.

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## Appendix F – TfNSW CORRESPONDENCE

------ Forwarded message ------From: **Bridget Diggins** <<u>bridget@securetrafficsolutions.com.au</u>> Date: Tue, 28 Jul 2020 at 22:37 Subject: Construction Traffic & Pedestrian Management Sub Plan - Kyeemagh Public School To: <<u>Chantel.TU@tmc.transport.nsw.gov.au</u>>

Hi Chantel,

My client Taylor Constructions are upgrading Kyeemagh Public School. None of the works affect any lanes on an RMS road. One of the conditions that they require is confirmation that I have consulted with TfNSW about the works that are going ahead and confirmation I have informed you of the works and I suppose confirmation that no approvals are required

Did I need to submit an rol application to get this confirmation or can you direct me to who can provide it.

I have attached a copy of our Construction Traffic & Pedestrian Management Sub Plan for Kyeemagh Public School for your review.

Most of the work will be from within the boundary of the site. If you could help me with who to contact regarding this it would be greatly appreciated.

Thank you for your help

Kind Regards,

Bridget Diggins Managing Director Tel: 0416 430 138

Secure Traffic Solutions Pty Ltd Address: PO Box 760 MANLY, NSW 1655

Email: <u>bridget@securetrafficsolutions.com.au</u> www.securetrafficsolutions.com.au

## **TRAFFIC CONTROL PLANS**





[Type text] SECURE TRAFFIC SOLUTIONS 23/06/2020







# TAYLOR

APPENDIX 9: CONSTRUCITON NOISE & VIBRATION MANAGEMENT SUB PLAN



Taylors

Kyeemagh School

# Construction Noise and Vibration Management Sub Plan

White Noise Acoustics 303, 74 Pitt Street, Sydney NSW 2000

ABN: 35 632 449 122

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Document Control

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|------------------|---|
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| Attention        | Shanil Prasad   |

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# **1** Introduction

White Noise Acoustics has been engaged to undertake the acoustic assessment of the noise and vibration impacts during the construction stage of the Kyeemagh Public School project.

The assessment has been undertaken in conjunction with the requirements of Item B15 of the projects *Conditions of Consent* and the EPA's Interim Construction Noise Guideline which is detailed in this report.

This report includes the recommended noise and vibration mitigations and management controls for the operation of construction activities on the site to ensure impacts to surrounding receivers are minimised.

## 2 Development Description

The proposed development includes the construction of a Kyeemagh Public School project which is located in the block bound by Jacobson Avenue, Beehag Street and Tancred Avenue Kyeemagh.

The surrounding receivers to the site include residential receivers within proximity to the site.

The site location, in relation to surrounding buildings, is shown in Figure 1 below.



Figure 1 – Site Location and Surrounding Receivers

## 2.1 Conditions of Consent

The management of noise and vibration assassinated with the required construction works to be undertaken as part of the project will be undertaken in conjunction with the requirements of the DA Conditions of Consent, including Item B15 that requires the construction of the project to comply with NSW Dept of Env & Climate Change *"Interim Construction Noise Guideline"* 2009 and includes the following:

#### B15

#### Construction Environmental Management Plan

*The Construction Noise and Vibration Management Sub-Plan (CNSWMSP) must address, but not be limited to, the following:* 

(a) be prepared by a suitably qualified and experienced noise expert; (b) describe procedures for achieving the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009);

(c) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers; (d) include strategies that have been developed with the community for managing high noise generating works;

(e) describe the community consultation undertaken to develop the strategies in condition B15(d);

*(f) include a complaints management system that would be implemented for the duration of the construction; and* 

(g) include a program to monitor and report on the impacts and environmental performance of the development and the effectiveness of the management measures in accordance with condition B12(d).

This report has been undertaken in compliance with the items above and details the required management controls to comply with the Conditions of Consent.

# **3** Existing Acoustic Environment

The Kyeemagh Public School project is located within the block bond by Jacobson Avenue, Beehag Street and Tancred Avenue Kyeemagh.

Existing environmental noise levels at the site are dominated by traffic noise generated predominantly from surrounding roadways.

As part of this previously conducted *Kyeemagh Infants School, SSDA Noise Impact Assessment* undertaken by SLR and dated January 2019 an assessment of background noise levels has been undertaken, which will be used as the basis of this report. The site survey included the use of two noise monitoring locations which are detailed in Figure 1 above.

## 3.1 Noise Survey Results

The results of the noise survey undertaken within the *Kyeemagh Infants School, SSDA Noise Impact Assessment* undertaken by SLR and dated January 2019 report have been used as the basis of this assessment and are summarised in Table 1 below.

| Measurement<br>Location | Time of<br>Measurement | L <sub>Aeq, 15min</sub><br>dB(A) | L <sub>A90, 15min</sub><br>dB(A) | Comments  |
|-------------------------|------------------------|----------------------------------|----------------------------------|---|
| Location 1 –            | Daytime                | 44                               | 56                               | Noise level at the<br>site dominated by<br>vehicle<br>movements on<br>surrounding<br>roadways |
| South East of the site  | Evening                | 51                               | 57                               |   |
| ono                     | Nighttime              | 41                               | 53                               |   |
| Location 2 –            | Daytime                | 43                               | 56                               |   |
| site                    | Evening                | 49                               | 56                               |   |
|                         | Nighttime              | 38                               | 51                               | ,   |

#### Table 1 – Results of Noise Survey at the Site

## **4** Construction Noise and Vibration Assessment

This section of the report details the assessment of noise associated with the proposed construction activities associated with the development. The assessment has been undertaken to assess the potential noise impacts from construction and excavation on surrounding receivers to the site.

The proposed construction and excavation activities to be undertaken on the site include the excavation and construction on the site. The development will then be constructed using normal construction processes.

#### 4.1 Construction Noise

The assessment of construction noise impacts generated from the site has been undertaken in accordance with the requirements of the EAP Interim Construction Noise Guideline.

The EPA's Interim Construction Noise Guideline defines normal day time hours as the following:

## 2.2 Recommended standard hours

The recommended standard hours for construction work are shown in Table 1; however, they are not mandatory. There are some situations, as described below, where construction work may need to be undertaken outside of these hours. The likely noise impacts and the ability to undertake works during the recommended standard hours should be considered when scheduling work.

| Work type           | Recommended standard hours of work*   |
|---------------------|---|
| Normal construction | Monday to Friday 7 am to 6 pm<br>Saturday 8 am to 1 pm<br>No work on Sundays or public holidays     |
| Blasting            | Monday to Friday 9 am to 5 pm<br>Saturday 9 am to 1 pm<br>No blasting on Sundays or public holidays |

 Table 1:
 Recommended standard hours for construction work

\* The relevant authority (consent, determining or regulatory) may impose more or less stringent construction hours.

## 4.1.1 Approved Hours of Work

Works on the site will be undertaken in accordance with the requirements of the DA *Conditions of Consent* which will define the normal working hours for the project.

## 4.2 Proposed Appliances

The proposed appliances which will be used as part of the excavation and construction of the project are detailed in the table below.

| Tasks                 | Equipment                        | Sound Power Levels<br>per task<br>dB(A) L <sub>10</sub> | Aggregate Sound<br>Power Level per Task<br>dB(A) L <sub>10</sub> |
|-----------------------|----------------------------------|---|--|
| Site Excavations      | Jack hammer mounted on excavator | 118   | 122  |
|                       | Saw cutting                      | 119   |  |
|                       | Excavators and bulldozers        | 115   |  |
|                       | Materials Movements              | 105   | _  |
|                       | Bulldozers                       | 115   | _  |
|                       | Trucks                           | 109   | _  |
| Construction<br>Works | Piling                           | 115   | 120  |
|                       | Welder                           | 101   | _  |
|                       | Saw cutter                       | 109   | _  |
|                       | Dump truck                       | 109   | _  |
|                       | Concrete saw                     | 119   | _  |
|                       | Power hand tools                 | 109   | _  |
|                       | Cranes                           | 110   | _  |
| Notes: Noise levels   | Cranes                           | 110   | -  |

Table 2 – Noise Level from Expected Demotion Appliances

Notes: Noise levels of proposed equipment to be used on the site based on the Australian Standard AS2436-2010 and noise level measurements previously undertaken of similar equipment on construction sites.

## 4.3 Construction Noise Criteria

This section of the report details the relevant construction noise criteria which is applicable to the site including the EPA's *Interim Construction Noise Guideline* (ICNG).

## 4.3.1 Interim Construction Noise Guideline

Noise criteria for construction and excavation activities are discussed in the *Interim Construction Noise Guideline* (ICNG). The ICNG also recommends procedures to address potential impacts of construction noise on residences and other sensitive land uses. The main objectives of the ICNG are summarised as follows:

- Promote a clear understanding of ways to identify and minimise noise from construction works;
- Focus on applying all "feasible" and "reasonable" work practices to minimise construction noise impacts;
- Encourage construction to be undertaken only during the recommended standard hours unless approval is given for works that cannot be undertaken during these hours;
- Streamline the assessment and approval stages and reduce time spent dealing with complaints at the project implementation stage; and
- Provide flexibility in selecting site-specific feasible and reasonable work practices in order to minimise noise impacts.
The ICNG contains a quantitative assessment method which is applicable to this project. Guidance levels are given for airborne noise at residences and other sensitive land uses.

The quantitative assessment method involves predicting noise levels at sensitive receivers and comparing them with the Noise Management Levels (NMLs). The NML affectation categories for receivers have been reproduced from the guideline and are listed in the table below.

| Receiver<br>Type | Time of Day   | Noise<br>Management Level<br>LAeq(15minute)1,2 | How to Apply  |
|------------------|---|--|---|
| Residential      | Recommended<br>standard hours:<br>Monday to Friday                                | Noise affected<br>RBL + 10 dB                  | The noise affected level represents the point above which there may be some community reaction to noise.  |
|                  | 7 am to 6 pm<br>Saturday 8 am to 1 pm<br>No work on Sundays or<br>public holidays |  | • Where the predicted or measured LAeq(15minute) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level.                                  |
|                  |   |  | • The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.   |
|                  |   | Highly noise<br>affected<br>75 dBA             | The highly noise affected level represents<br>the point above which there may be strong<br>community reaction to noise.   |
|                  |   |  | • Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account:                  |
|                  |   |  | <ol> <li>Times identified by the community<br/>when they are less sensitive to<br/>noise (such as before and after<br/>school for works near schools, or<br/>mid-morning or mid-afternoon for<br/>works near residences.</li> </ol> |
|                  |   |  | <ol> <li>If the community is prepared to<br/>accept a longer period of<br/>construction in exchange for<br/>restrictions on construction times.</li> </ol>  |
|                  | Outside recommended standard hours  | Noise affected<br>RBL + 5 dB                   | • A strong justification would typically be required for works outside the recommended standard hours.  |
|                  |   |  | • The proponent should apply all feasible and reasonable work practices to meet the noise affected level.   |
|                  |   |  | • Where all feasible and reasonable practices have been applied and noise is more than 5 dB above the noise affected level, the proponent should negotiate with the community.  |

| Table 3 – Noise Management | Levels from Constructio | n – Quantitative Assessment |
|----------------------------|-------------------------|-----------------------------|

| Receiver<br>Type   | Time of Day  | Noise<br>Management Level<br>LAeq(15minute)1,2  | How to Apply  |
|--|--|---|---|
| Classrooms<br>at schools<br>and other<br>educational<br>institutions | When is use  | Internal Noise level<br>45 dB(A)  | During construction, the proponent should<br>regularly update the occupants of the<br>premises regarding noise levels and hours<br>of work.   |
|  | Note 1 Noise levels app<br>and at a height<br>from the resider<br>noise-affected p<br>floors of the nois | ly at the property boundar<br>of 1.5 m above ground leve<br>ce, the location for measu<br>oint within 30 m of the resi<br>a affected residence. | y that is most exposed to construction noise,<br>el. If the property boundary is more than 30 m<br>ring or predicting noise levels is at the most<br>dence. Noise levels may be higher at upper |
|  | Note 2 The RBL is the o<br>assessment per<br>described in det  | verall single-figure backgro<br>iod (during or outside the r<br>ail in the NSW Industrial N   | ound noise level measured in each relevant<br>ecommended standard hours). The term RBL is<br>oise Policy (EPA 2000).  |

Table 3 – Continued

Based on the table above the suitable construction noise management levels for works undertaken on the site is detailed in Table 6 below.

| Noise<br>Source  | Time Period  | Receiver<br>Type         | Construction Noise<br>Management Level <sup>1</sup> | 'High Noise<br>Affected' Level <sup>1</sup> |  |  |
|--|--|--------------------------|---|---|--|--|
| Construction<br>Noise  | During period of approved hours of works as detailed | Residential<br>Receivers | 53 dB(A) LAeq (15min)                               | 75 dB(A) LAeq (15min)                       |  |  |
|  | within Item 92 of the DA                             | Education                | Internal Noise level                                | 70 dB(A) LAeq (15min)                       |  |  |
|  | Conditions of Consent                                | Receivers                | 45 dB(A)  |   |  |  |
| Note 1: Construction noise management levels based on the Interim Construction Noise Guideline |  |                          |   |   |  |  |

## 4.3.2 Construction Vibration Assessment

This section of the report details the assessment of construction vibration impacts on surrounding receivers.

Effects of ground borne vibration on buildings may be segregated into the following three categories:

- Human comfort vibration in which the occupants or users of the building are inconvenienced or possibly disturbed. Refer to further discussion in Section 4.4.1.
- Effects on building contents where vibration can cause damage to fixtures, fittings and other non-building related objects. Refer to further discussion in Section 4.4.2.
- Effects on building structures where vibration can compromise the integrity of the building or structure itself. Refer to further discussion in Section 4.4.2.

### 4.3.3 Vibration Criteria – Human Comfort

Vibration effects relating specifically to the human comfort aspects of the project are taken from the guideline titled *"Assessing Vibration – A Technical Guideline"*. (AVTG) This type of impact can be further categorised and assessed using the appropriate criterion as follows:

- Continuous vibration from uninterrupted sources (refer to Table 5).
- Impulsive vibration up to three instances of sudden impact e.g. dropping heavy items, per monitoring period (refer to Table 6).
- Intermittent vibration such as from drilling, compacting or activities that would result in continuous vibration if operated continuously (refer to Table 7).

| Location   | Assessment period     | Preferred Values |               | Maximum Values |               |
|--|-----------------------|------------------|---------------|----------------|---------------|
|  |                       | z-axis           | x- and y-axis | z-axis         | x- and y-axis |
| Residences   | Daytime               | 0.010            | 0.0071        | 0.020          | 0.014         |
|  | Night-time            | 0.007            | 0.005         | 0.014          | 0.010         |
| Offices, schools,                                    | Day or night-         | 0.020            | 0.014         | 0.040          | 0.028         |
| educational<br>institutions and<br>places of worship | time                  | 0.04             | 0.029         | 0.080          | 0.058         |
| Workshops  | Day or night-<br>time | 0.04             | 0.029         | 0.080          | 0.058         |

 Table 5
 Continuous vibration acceleration criteria (m/s2) 1 Hz-80 Hz

| Location  | Assessment            | Preferred Values |               | Maximum Values |               |
|---|-----------------------|------------------|---------------|----------------|---------------|
| F   | period                | z-axis           | x- and y-axis | z-axis         | x- and y-axis |
| Residences  | Daytime               | 0.30             | 0.21          | 0.60           | 0.42          |
|   | Night-time            | 0.10             | 0.071         | 0.20           | 0.14          |
| Offices, schools,<br>educational<br>institutions and<br>places of worship | Day or night-<br>time | 0.64             | 0.46          | 1.28           | 0.92          |
| Workshops   | Day or night-<br>time | 0.64             | 0.46          | 1.28           | 0.92          |

Table 6 Impulsive vibration acceleration criteria (m/s2) 1 Hz-80 Hz

| Table 7 | ntermittent vibration impacts criteria (m/s1.75) 1 Hz-80 Hz |
|---------|---|
|         |   |

| Location   | Daytime             |                   | Night-time          |                   |
|--|---------------------|-------------------|---------------------|-------------------|
|  | Preferred<br>Values | Maximum<br>Values | Preferred<br>Values | Maximum<br>Values |
| Residences   | 0.20                | 0.40              | 0.13                | 0.26              |
| Offices, schools, educational institutions and places of worship | 0.40                | 0.80              | 0.40                | 0.80              |
| Workshops  | 0.80                | 1.60              | 0.80                | 1.60              |

# 4.3.4 Vibration Criteria – Building Contents and Structure

The vibration effects on the building itself are assessed against international standards as follows:

- For transient vibration: British Standard BS 7385: Part 2-1993 "Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration" (BSI 1993); and
- For continuous or repetitive vibration: German DIN 4150: Part 3 1999 "Effects of Vibration on Structure" (DIN 1999).

## 4.3.4.1 Standard BS 7385 Part 2 - 1993

For transient vibration, as discussed in standard BS 7385 Part 2-1993, the criteria are based on peak particle velocity (mm/s) which is to be measured at the base of the building. These are summarised in Table 8 and illustrated in the Figure below.

| Line in<br>Figure<br>below | Type of Building   | Peak Component Particle Velocity in Frequency Range<br>of Predominant Pulse |   |  |
|----------------------------|--|---|---|--|
| Solow                      |  | 4 Hz to 15 Hz   | 15 Hz and Above   |  |
| 1                          | Reinforced or framed<br>structures Industrial and<br>heavy commercial buildings              | 50 mm/s at 4 Hz and above   |   |  |
| 2                          | Unreinforced or light framed<br>structures Residential or light<br>commercial type buildings | 15 mm/s at 4 Hz increasing<br>to 20 mm/s at 15 Hz                           | 20 mm/s at 15 Hz increasing<br>to 50 mm/s at 40 Hz and<br>above |  |

Standard BS 7385 Part 2 – 1993 states that the values in Table 8 relate to transient vibration which does not cause resonant responses in buildings. Where the dynamic loading caused by continuous vibration events is such as that results in dynamic magnification due to resonance (especially at the lower frequencies where lower guide values apply), then the values in Table 8 may need to be reduced by up to 50% (refer to Line 3 in the Figure below).



In the lower frequency region where strains associated with a given vibration velocity magnitude are higher, the recommended values corresponding to Line 2 are reduced. Below a frequency of 4 Hz where a high displacement is associated with the relatively low peak component particle velocity value, a maximum displacement of 0.6 mm (zero to peak) is recommended. This displacement is equivalent to a vibration velocity of 3.7 mm/s at 1 Hz.

The standard also states that minor damage is possible at vibration magnitudes which are greater than twice those given in Table 8, and major damage to a building structure may occur at values greater than four times the tabulated values.

Fatigue considerations are also addressed in the standard and it is concluded that unless calculation indicates that the magnitude and number of load reversals is significant (in respect of the fatigue life of building materials) then the values in Table 8 should not be reduced for fatigue considerations.

## 4.3.4.2 Standard DIN 4150 Part 3 - 1999

For continuous or repetitive vibration, standard DIN 4150 Part 3-1999 provides criteria based on values for peak particle velocity (mm/s) measured at the foundation of the building; these are summarised in Table 9. The criteria are frequency dependent and specific to particular categories of structures.

| Type of Structure   | Peak Component Particle Velocity, mm/s |                |                                 |  |
|---|--|----------------|---------------------------------|--|
|   | Vibration at the                       | Vibration of   |                                 |  |
|   | 1 Hz to 10 Hz                          | 10 Hz to 50 Hz | 50 Hz to 100<br>Hz <sup>1</sup> | plane of<br>highest floor<br>at all<br>frequencies |
| Buildings used for commercial<br>purposes, industrial buildings and<br>buildings of similar design  | 20                                     | 20 to 40       | 40 to 50                        | 40   |
| Dwellings and buildings of similar<br>design and/or use   | 5                                      | 5 to 15        | 15 to 20                        | 15   |
| Structures that, because of their<br>sensitivity to vibration, do not<br>correspond to those listed in lines<br>1 and 2 and are of great intrinsic<br>value (e.g. buildings that are<br>under a preservation order) | 3                                      | 3 to 8         | 8 to 10                         | 8  |
| Note 1: For frequencies above 100Hz, at least the values specified in this column shall be applied.   |  |                |                                 |  |

 Table 9
 Structural damage criteria as per standard DIN 4150 Part 3 - 1999

## 4.3.5 Project Vibration Criteria

Based on the details included in the sections above the project specific vibration criteria to protect the surrounding residential receivers from structural or architectural damage includes the following:

- 1. Project construction vibration criteria at:
  - a. Residential Receivers 10mm/s

# 4.4 Construction Noise Management

Based on the assessment conducted of the expected construction noise levels generated from the site, levels are generally expected to require the building contractor to engage in management of activities on the site and engagement with the local community.

Notwithstanding, the following management controls are recommended to mitigate construction noise levels on the site:

- 1. Construction to be undertaken within the approved hours detailed within the projects *Conditions of Consent.*
- 2. All plant and equipment are to be maintained such that they are in good working order.
- 3. A register of complaints is to be recorded in the event of complaints being received, including location, time of complaint, nature of the complaint and actions resulting from the complaint.
- 4. If required a noise level measurement of the offending plant item generating complaints is to be conducted and noise mitigations undertaken to reduce noise levels to within Noise Management levels in the event magnitude of noise levels is found to be above suitable levels.
- 5. The use of percussive equipment including hydraulic hammering should be limited such that they are not undertaken prior to 7.30am on weekdays and prior to 8.30am on Saturdays.
- 6. Where possible any excavation to be undertaken on the site is to include ripping of material where possible.

In addition to the recommended mitigations above details of the proposed construction (including excavation) works to be conducted on the site, including type of activities to be conducted as well as the expected duration of activities should be provided to the neighbouring receivers.

In the event noise levels are found to required additional noise reduction then all possible and practical mitigations are required to be included in the construction of the project. Possible acoustic treatments and controls may include the following:

- 1. Use of alternative appliances to complete the required works which result in reduced noise impacts on surrounding neighbours.
- 2. Period when noisy appliances are undertaken, such as undertaking noisy works on locations with the greatest distance to residential receivers during morning periods if possible.
- 3. Construction of acoustic screening to permanently located high noise generating equipment such as pumps and generators.
- 4. Scheduling of high noise generating works outside of noise sensitive periods if possible.
- 5. Other site specific treatments and controls which may become possible once works commence.

# 4.5 Construction Vibration Impacts

An assessment of the potential for vibration generated as part of the required construction activities on the project (including excavation and construction) has been undertaken.

As the proposed building to be demolished on the site are not attached to neighbouring structures and the proximity of neighbouring structures to the development site (which include residential receives) vibration levels generated from the proposed excavation and construction on the site are expected to comply with all vibration criteria detailed in this report.

In the event that vibration rolling or compacting of ground conditions is required within 10m of neighbouring buildings than attended vibration measurements during the use of this equipment should be undertaken to ensure vibration does not result in unreasonable levels of vibration impact on the neighbouring building structures.

Based on the location of the site and the proximity of the surround buildings vibration generated from proposed construction activities on the site are not expected to result in magnitudes approaching the project vibration criteria detailed in Section 4.5.3.

## 4.6 Noise and Vibration Monitoring

As part of the management of noise from the proposed excavation and construction activities to be undertaken on the site the following noise and vibration measurements are recommended to be undertaken:

1. Noise – Attended noise level measurements of typical excavation and construction activities should be undertaken at site. A

Attended construction noise surveys of the site and surrounding impacts on neighbours should be undertaken during the following as a minimum:

- a. Commencement of any rock breaking or sawing on the site.
- b. In response to any ongoing complaints received from neighbours.
- 2. Vibration Based on the proximity of the surrounding receivers to the works magnitudes of vibration resulting from construction activities required to be undertaken on the site are not expected to approach vibration limits detailed in Section 4.5.3 of this report, therefore vibration monitoring is not recommended.

Attended vibration measurements could be undertaken at a receiver location in the event complaints resulting from construction activities resulting from the perception of vibration are experienced by the occupants of buildings within the vicinity of the site.

# **5** Community Engagement

During the proposed construction of the project (including excavation and construction) the building contractor is required to engage in community interaction. The community interaction and notification is required to include the following:

- 1. Notification of the proposed works to be undertaken on the site and the periods when works will be conducted, including information regarding the programme of works such as excavation. This should include the expected period when activities such as hydraulic hammering, rock breaking, concrete or rock sawing is required to be undertaken.
- 2. Details of the relevant site representative where complaints can be registered.
- 3. Details of the methodology to respond to complaints raised from the surrounding receivers.
- 4. A register of complaints, to be kept on site including record of time and nature of the complaint as well as the outcomes and comments regarding investigations resulting from the complaint.

Engagement with the community has been undertaken (as required by Items 15 d) and e) of the consent) to include the mitigation of noise from the high noise works. This includes the strategies detailed in the *Community Communication Strategy* which is included in Appendix C and includes Table 4 for the engagement of the community regarding construction noise generated from the site (including high noise works).

# 5.1 Community Consultation

Community consultation has been and will continue to be undertaken in accordance with the *Community Communication Strategy* which is included in Appendix C.

# 5.2 Contingency Plans

In the event noise or vibration complaints are received from surrounding receivers the following methodology to assess impacts from the construction activities will be undertaken:

- 1. Review processes being conducted on the site and identify the item of plant or activity generating the source of the noise.
- 2. Assess the works being conducted and implement possible and practical mitigations to the item identified in the point above including work practices (alternatives), location of works, time when works are being conducted. Mitigations will include possible and practical methods when possible.
- 3. Detail a response to activity including noise monitoring/measurements if required.

# 6 Conclusion

This report details the construction noise and vibration assessment of the proposed construction of the proposed Kyeemagh Public School project.

An assessment of noise and vibration impacts from the required processes to be undertaken during the construction period of the project (including excavation and construction) has been undertaken and suitable treatments, management controls, perioding measurements and community engagement has been detailed in this report.

Providing the recommendations in this report are included in the construction of the site, compliance with the relevant EPA's Interim Construction Noise Guideline and Item B15 of the propjets *Conditions of Consent* will be achieved.

For any additional information please do not hesitate to contact the person below.

Regards

B ( While

Ben White Director White Noise Acoustics

# 7 Appendix A – Glossary of Terms

| Ambient<br>Sound        | The totally encompassing sound in a given situation at a given time, usually composed of sound from all sources near and far.   |  |  |  |  |
|-------------------------|---|--|--|--|--|
| Audible Range           | The limits of frequency which are audible or heard as sound. The normal ear in young adults detects sound having frequencies in the region 20 Hz to 20 kHz, although it is possible for some people to detect frequencies outside these limits.   |  |  |  |  |
| Character,<br>acoustic  | The total of the qualities making up the individuality of the noise. The pitch or shape of a sound's frequency content (spectrum) dictate a sound's character.  |  |  |  |  |
| Decibel [dB]            | The level of noise is measured objectively using a Sound Level Meter. The following are examples of the decibel readings of every day sounds;   |  |  |  |  |
|                         | 0dB the faintest sound we can hear  |  |  |  |  |
|                         | 30dB a quiet library or in a quiet location in the country  |  |  |  |  |
|                         | 45dB typical office space. Ambience in the city at night  |  |  |  |  |
|                         | 60dB Martin Place at lunch time   |  |  |  |  |
|                         | 70dB the sound of a car passing on the street   |  |  |  |  |
|                         | 80dB loud music played at home  |  |  |  |  |
|                         | 90dB the sound of a truck passing on the street   |  |  |  |  |
|                         | 100dB the sound of a rock band  |  |  |  |  |
|                         | 115dB limit of sound permitted in industry  |  |  |  |  |
|                         | 120dB deafening   |  |  |  |  |
| dB(A)                   | <i>A-weighted decibels</i> The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter. The sound pressure level in dB(A) gives a close indication of the subjective loudness of the noise. |  |  |  |  |
| Frequency               | Frequency is synonymous to <i>pitch</i> . Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.   |  |  |  |  |
| Loudness                | A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on  |  |  |  |  |
| LMax                    | The maximum sound pressure level measured over a given period.  |  |  |  |  |
| LMin                    | The minimum sound pressure level measured over a given period.  |  |  |  |  |
| L1                      | The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.   |  |  |  |  |
| L10                     | The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.  |  |  |  |  |
| L90                     | The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the $L_{90}$ noise level expressed in units of dB(A).  |  |  |  |  |
| Leq                     | The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.  |  |  |  |  |
| Background<br>Sound Low | The average of the lowest levels of the sound levels measured in an affected area in the absence of noise from occupants and from unwanted, external ambient noise sources. Usually taken to mean the LA90 value  |  |  |  |  |
| Ctr                     | A frequency adaptation term applied in accordance with the procedures described in ISO 717.   |  |  |  |  |
| dB (A)                  | 'A' Weighted overall sound pressure level   |  |  |  |  |

| Noise<br>Reduction                      | The difference in sound pressure level between any two areas. The term "noise reduction" does not specify any grade or performance quality unless accompanied by a specification of the units and conditions under which the units shall apply   |
|---|--|
| NR Noise<br>Rating                      | Single number evaluation of the background noise level. The NR level is normally around 5 to 6 dB below the "A" weighted noise level. The NR curve describes a spectrum of noise levels and is categorised by the level at 1000 Hz ie the NR 50 curve has a value of 50 dB at 1000 Hz. The NR rating is a tangential system where a noise spectrum is classified by the NR curve that just encompasses the entire noise spectrum consideration.  |
| Rw                                      | Weighted Sound Reduction Index - Laboratory test measurement procedure that provides a single number indication of the acoustic performance of a partition or single element. Calculation procedures for Rw are defined in ISO 140-2:1991 "Measurement of Sound Insulation in Buildings and of Building Elements Part 2: Determination, verification and application of precision data".   |
| R'w                                     | Field obtained Weighted Sound Reduction Index - this figure is generally up to 3-5 lower than the laboratory test determined level data due to flanked sound transmission and imperfect site construction.   |
| Sound<br>Isolation                      | A reference to the degree of acoustical separation between any two areas. Sound isolation may refer to sound transmission loss of a partition or to noise reduction from any unwanted noise source. The term "sound isolation" does not specify any grade or performance quality and requires the units to be specified for any contractual condition  |
| Sound<br>Pressure<br>Level, LP dB       | A measurement obtained directly using a microphone and sound level meter. Sound pressure level varies with distance from a source and with changes to the measuring environment. Sound pressure level equals 20 times the logarithm to the base 10 of the ratio of the rms sound pressure to the reference sound pressure of 20 micro Pascals.   |
| Sound Power<br>Level, L <sub>w</sub> dB | Sound power level is a measure of the sound energy emitted by a source, does not change with distance, and cannot be directly measured. Sound power level of a machine may vary depending on the actual operating load and is calculated from sound pressure level measurements with appropriate corrections for distance and/or environmental conditions. Sound power levels is equal to 10 times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 picoWatt |
| Speech<br>Privacy                       | A non-technical term but one of common usage. Speech privacy and speech intelligibility are opposites and a high level of speech privacy means a low level of speech intelligibility. It should be recognised that acceptable levels of speech privacy do not require that speech from an adjacent room is inaudible.  |
| Transmission<br>Loss                    | Equivalent to Sound Transmission Loss and to Sound Reduction Index in terminology used in countries other than Australia. A formal test rating of sound transmission properties of any construction, by usually a wall, floor, roof etc. The transmission loss of all materials varies with frequency and may be determined by either laboratory or field tests. Australian Standards apply to test methods for both situations.   |
|   |  |

8 Appendix B – CV of Ben White

# Curriculum Vitae – Benjamin White

58 Carrington Road, Randwick NSW 2031

# Employment Experience:

Director - White Noise Acoustics: Present Director/Engineer - Acoustic Logic Consultancy: July 2018

# Experience:

Ben White the Director of White Noise has over 17 years of experience in acoustic.

Ben has significant experience in providing acoustic services and expert advice in the following areas:

- Residential acoustic reports including aircraft noise (AS2021) assessments, traffic noise, train noise and vibration assessments.
- Noise emission assessments for various projects including assessments with planning requirements using EPA, Department of Planning, Council DCP's and similar regulatory requirements.
- Planning approvals including Development Applications for multi dwelling residential developments, commercial developments, hotels and boarding houses, places of entertainment, carparks, mixed use developments, shopping centres and the like.
- Expert court witness including Land and Environment Court and other expert witness work.
- Project planning and specifications for types of projects including residential, commercial, retail, hotel accommodation, warehouses and industrial developments and mixed-use projects.
- Project delivery for all types of projects including, design advice and project delivery requirements at all stages of projects during design and construction.
- Certification works including on site testing for the provision of certification of all types of projects including items required to comply with Part F5 of the BCA as well as project specific acoustic requirements.
- Mechanical design and advice for the treatments of mechanical services with project requirements.
- External façade design and specification.
- Specialised acoustic design advice including areas of projects.
- Issues with existing building include site surveys and audits as well as advice regarding rectification if required.



March 2019 –

March 2001 -

9 Appendix C – Community Consultation Strategy





School Infrastructure NSW

# **Community Communication Strategy**

**Upgrade to Kyeemagh Public School** 

# Contents

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# **Document Purpose**

This Community Communication Strategy (CCS) has been developed to:

- Successfully consider and manage stakeholder and community expectations as integral to the successful delivery of the project.
- Outline interfaces with other disciplines, including safety, construction, design and environment, to ensure all
  activities are co-ordinated and drive best practice project outcomes.
- Inform affected stakeholders, such as the local community or road users about construction activities.
- Provide a delivery strategy which enables the open and proactive management of issues and communications.
- Highlight supporting procedures and tools to enable the team to deliver this plan effectively.
- Provide support for the broader communications objectives of School Infrastructure NSW (SINSW), including the promotion of the project and its benefits.

This Community Consultation Strategy (CCS) will be implemented through the design and construction phase of the project, and for 12 months following construction completion. Table 1 below lists the communication and engagement requirements outlined in the State Significant Development (SSD) application consent conditions.

#### Plan review

The CCS will be revised regularly to address any changes in the project management process, comments and feedback by relevant stakeholders, and any changes identified as a result of continuous improvement undertakings. This will be done in close consultation with the SINSW Senior Project Director, appointed Project Management Company and/or Contractor and SINSW Community Engagement Manager.

#### Approval

The CCS is reviewed and approved by the SINSW Senior Project Director, in close consultation with Schools Operations and Performance, with final endorsement from the SINSW Community Engagement Senior Manager before being submitted to the Planning Secretary for information.

# Table 1: List of SSD application consent conditions for communication and engagement and where they are addressed in this strategy

| Consent conditions for communication and engagement  | The CCS addresses this in section |
|--|-----------------------------------|
| Identify people to be consulted during the design and construction phase                         | Section 4                         |
|  | <ul> <li>Section 5</li> </ul>     |
| Set out procedures and mechanisms for the regular distribution of accessible                     | <ul> <li>Section 6</li> </ul>     |
| information about or relevant to the development   | <ul> <li>Section 7</li> </ul>     |
|  | <ul> <li>Section 8.4</li> </ul>   |
| Provide for the formation of community-based forums, if required, that focus on key              | <ul> <li>Section 4</li> </ul>     |
| environmental management issues for the development  |                                   |
| Set out procedures and mechanisms:   | <ul> <li>Section 4</li> </ul>     |
| Through which the community can discuss or provide feedback to the Applicant                     | <ul> <li>Section 6</li> </ul>     |
|  | <ul> <li>Section 8.5</li> </ul>   |
| Set out procedures and mechanisms:   | <ul> <li>Section 8.5</li> </ul>   |
| <ul> <li>Through which the Applicant will respond to enquiries or feedback from the</li> </ul>   |                                   |
| community; and   |                                   |
| Set out procedures and mechanisms:   | <ul> <li>Section 8.5</li> </ul>   |
| <ul> <li>To resolve any issues and mediate any disputes that may arise in relation to</li> </ul> |                                   |
| construction and operation of the development, including disputes regarding                      |                                   |
| rectification or compensation  |                                   |

#### 1. Context

The NSW Government is investing \$6.7 billion over four years to deliver more than 190 new and upgraded schools to support communities across NSW. In addition, a record \$1.3 billion is being spent on school maintenance over five years, along with a record \$500 million for the sustainable Cooler Classrooms program to provide air conditioning to schools. This is the largest investment in public education infrastructure in the history of NSW.

School Infrastructure NSW is redeveloping Kyeemagh Public School to provide additional new permanent learning spaces and upgraded core facilities to meet the school's enrolment growth.

#### The benefits

- New flexible learning spaces.
- A new staff/administration area.
- A new library.
- A new hall.
- New amenities.
- A new canteen.
- A new covered outdoor learning area (COLA).

The Kyeemagh Public School upgrade is classified as a State Significant Development, and has been assessed by the Department of Planning, Industry and Environment (DPIE). Consent was provided on 16 July 2020.

DPIE's web page on the project is here.

#### 2. Community Engagement Objectives

SINSW's mission is to provide school infrastructure solutions by working collaboratively with all our stakeholders to create learning environments across NSW that serve our future needs and make us all proud.

This CCS has been developed to achieve the following community engagement objectives:

- Promote the benefits of the project
- Build key school community stakeholder relationships and maintain goodwill with impacted communities
- Manage community expectations and build trust by delivering on our commitments
- Provide timely information to impacted stakeholders, schools and broader communities
- Address and correct misinformation in the public domain
- Reduce the risk of project delays caused by negative third party intervention
- Leave a positive legacy in each community.

#### 3. Key Messages

Through each phase of the project, the key messages, community engagement plan, and means of engagement will be regularly reviewed, refined and updated. Information that is currently in the public domain is outlined below.

#### 3.1. High level messaging

The NSW Government is investing \$6.7 billion over four years to deliver more than 190 new and upgraded schools to support communities across NSW. In addition, a record \$1.3 billion is being spent on school maintenance over five years, along with a record \$500 million for the sustainable Cooler Classrooms program to provide air conditioning to schools. This is the largest investment in public education infrastructure in the history of NSW.

#### 3.2. Project messaging

#### 3.2.1. Project status

The State Significant Development Application has been assessed by the Department of Planning, Industry & Environment (DPIE) and consent has been granted.

#### 3.2.2. Project benefits

School Infrastructure NSW is redeveloping Kyeemagh Public School to provide additional new permanent learning spaces and upgraded core facilities to meet the school's enrolment growth.

The benefits:

- New flexible learning spaces.
- A new library.
- A new hall.
- New amenities.
- A new canteen.
- A new covered outdoor learning area (COLA).
- A new staff/administration area.

#### 3.2.3. High-quality learning environment

The project will provide state-of-the-art classrooms and learning spaces that make use of the latest technology to enhance the learning experience for the next generation of students. The contemporary and sustainable facilities provide an outstanding working environment for school staff.

Flexible learning spaces are adaptable to accommodate small or large groups and facilitate students' use of modern technology, while working independently and collaboratively.

#### 3.2.4. Environmental benefits

The school will be upgraded in accordance with current sustainability principles. School Infrastructure NSW is committed to environmentally conscious construction and maintenance practices.

#### 3.3. Construction phase

#### 3.3.1. Safety

School Infrastructure NSW is committed to ensuring that work is completed safely and efficiently and with minimal impact to the local community. Prior to construction starting, any hazardous material is required to be removed from the site. This work will be carried out in accordance with regulatory requirements including the provisions of SafeWork NSW.

#### 3.3.2. Traffic management

The construction contractor has developed a Traffic Management Plan to ensure that vehicle movements are managed with minimal disruption to the local community. All construction vehicles (excluding worker vehicles) are to be contained wholly within the site, except if located in an approved on-street work zone, and vehicles must enter the site before stopping.

#### 3.3.3. Noise, vibration and dust

Any activity that could exceed approved construction noise management levels will be managed in strict accordance with the Protection of the Environment Operations Act 1997.

All works will be conducted in accordance with the Contractor's approved Construction Noise Management Sub-Plan. Vibration from works will be minimal and kept within acceptable levels of the document 'Assessing Vibration: a technical guideline' which outlines vibration criteria for day time periods.

Mitigation measures will be in place to manage noise and dust levels, including hoarding to minimise the effects of noise and dust and hosing down as required to ensure the safety of the school and local community.

Construction, including the delivery of materials to and from the site, may only be carried out between the following hours:

(a) between 7:00am and 6:00pm, Mondays to Fridays inclusive; and

(b) between 8:00am and 1:00pm, Saturdays.

No work may be carried out on Sundays or public holidays.

Soil remediation activities, may only be carried out between the following hours:

(a) between 7:00am and 6:00pm Mondays to Saturdays inclusive.

No soil remediation activities may be carried out on Sundays or public holidays.

Construction activities may be undertaken outside of the above hours if required:

(a) by the Police or a public authority for the delivery of vehicles, plant or materials; or

(b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm; or

(c) where the works are inaudible at the nearest sensitive receivers; or

(d) where a variation is approved in advance in writing by the Planning Secretary or his nominee if appropriate justification is provided for the works.

Notification of such construction activities as soil remediation or out of hours must be given to affected residents before undertaking the activities or as soon as is practical afterwards.

Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

(a) 9:00am to 12:00pm, Monday to Friday;

(b) 2:00pm to 5:00pm Monday to Friday; and

(c) 9:00am to 12:00pm, Saturday.

#### 3.3.4. Fauna and vegetation

School Infrastructure NSW is committed to ensuring construction work has a minimal impact upon fauna and vegetation.

School Infrastructure NSW will comply with all Development Consent Conditions relating to the protection of fauna and vegetation, and will comply with all relevant mitigation measures listed in the Environmental Impact Statement (EIS).

Prior to construction, a Construction Environmental Management Plan (CEMP) will be prepared to govern the completion of all construction works. The CEMP will detail measures to be taken for the protection and management of fauna and vegetation, will be prepared in accordance with relevant guidelines and performance indicators, and will be prepared to the satisfaction of DPIE.

Prior to the commencement of construction and/or vegetation clearing (whichever occurs first), pre clearing surveys and inspections for fauna will be undertaken. The surveys and inspection, and any subsequent relocation of fauna, will be undertaken under the guidance of a suitably qualified ecologist and must be in accordance with the methodology incorporated in a Biodiversity Management Sub-Plan. Evidence of the pre clearing surveys and inspections for fauna and any relocation of fauna must be provided to the satisfaction of the Certifying Authority.

A Vegetation Management Sub Plan will also be prepared to carefully manage the impact to fauna and vegetation during construction. Additionally, a Landscape Plan will be prepared prior to construction, which will include, amongst other important measures, provision for the planting of more than 60 trees, shrubs and groundcover. Importantly, a number of

trees to be removed will be incorporated into the landscape design and used in the remnant vegetation on site to enhance habitat including tree hollows and tree trunks (greater than 25-30cm in diameter and 3m in length).

#### 3.3.5. Soil and water

School Infrastructure NSW is committed to the appropriate management of soil and water on the construction site.

School Infrastructure NSW will comply with all Development Consent Conditions relating to soil and water management, and will comply with all relevant mitigation measures listed in the EIS.

Prior to construction, a CEMP will be prepared to govern the completion of all construction works. The CEMP will detail measures for the management of soil and water, will be prepared in accordance with relevant guidelines and performance indicators, and will be prepared to the satisfaction of the DPIE.

A suitably qualified and experienced consultant will prepare a Construction Soil and Water Management Sub-Plan (CSWMSP), which will form part of the CEMP. The CSWMSP will:

- describe erosion and sediment control measures to be implemented during construction
- provide a plan of how construction works will be managed in wet-weather events
- detail flows from the site to surrounding area
- describe the measures to be taken to manage stormwater and flood flows for small and large sized events
- include an Acid Sulfate Soils Management Plan (if required).

Erosion and sediment controls will be installed and maintained in accordance with the "Blue Book" – *Managing Urban Stormwater: Soils and Construction (4<sup>th</sup> edition).* These controls will be implemented prior to the commencement of any other site disturbance works.

A rainwater harvesting system will be installed onsite and used onsite during construction. Approval will be obtained prior to the discharge of onsite stormwater to Council's stormwater drainage system or street gutter.

Only approved soil and fill types will be used onsite. Accurate records will be kept on the volume and type of fill used onsite.

#### 3.3.6. Contamination

Prior to construction, a CEMP will be prepared to govern the completion of all construction works. The CEMP will detail contamination management measures, will be prepared in accordance with relevant guidelines and performance indicators, and will be prepared to the satisfaction of the DPIE.

The project site has been tested for contamination and some remediation work will be required prior to the commencement of the main works construction for the school upgrade.

The CEMP will include protocols for the management of unexpected contamination discovered during the course of construction works.

#### 3.3.7. Visual amenity

Prior to construction, a CEMP will be prepared to govern the completion of all construction works. The plan will detail measures to maintain visual amenity, will be prepared in accordance with relevant guidelines and performance indicators, and will be prepared to the satisfaction of the DPIE.

The CEMP will include provisions for the management of outdoor lighting. The installation and operation of outdoor lighting will comply with both AS 4282-2019 – Control of the Obtrusive Effects of Outdoor Lighting and AS 1158.3.1-2005 – Lighting for Roads and Public Spaces – Part 3.1: Pedestrian Area (Category P) Lighting.

Visual amenity impacts will be limited during construction via the installation of appropriate site fencing and adherence to site housekeeping procedures.

#### 3.3.8. Heritage

Prior to construction, a CEMP will be prepared to govern the completion of all construction works. The plan will detail measures to protect heritage matters, will be prepared in accordance with relevant guidelines and performance indicators, and will be prepared to the satisfaction of the DPIE.

The CEMP will include unexpected finds protocols for objects of Aboriginal or Historic heritage.

In the event that relics of Aboriginal heritage are discovered, all works in the immediate area will cease immediately, and consultation will occur with a suitably qualified archaeologist, registered Aboriginal representatives and DPIE to determine an appropriate management strategy.

In the event that relics of historic heritage are discovered, all works in the immediate area will cease immediately, and consultation will occur with DPIE to determine an appropriate management strategy.

#### 3.3.9. Disruptive works

Construction work for the Kyeemagh Public School project is underway. The following activities are planned for the upcoming weeks (*works will be outlined*). You can contact us directly using the details below to discuss any aspect of this work.

#### 3.3.10. Get involved

We are committed to working together with our school communities and other stakeholders to deliver the best possible learning facilities for students. Your feedback is important to us. For more information contact us via the details below.

- Email: schoolinfrastructure@det.nsw.edu.au
- Website: schoolinfrastructure.nsw.gov.au
- Phone: 1300 482 651

#### 3.4. Handover phase

#### 3.4.1. Traffic and access

Construction work on the Kyeemagh Public School project has been completed. We are now in a position to confirm access provisions for the new school, including pick-up and drop-off arrangements.

#### 3.5. Official school opening

A redevelopment of Kyeemagh Public School was completed today, and delivered brand new facilities including:

- new flexible learning spaces
- a new staff/administration area
- a new library
- a new hall
- new amenities
- a new canteen
- a new covered outdoor learning area (COLA).

Thank you for your patience during construction and we are thrilled to deliver this project for the school community.

#### 4. Project Governance

#### 4.1. Project Reference Group

The Department's engagement process strives to engage with key stakeholders from the school community. As part of this process, a Project Reference Group (PRG) is established early in the project with nominated representatives from the school community to ensure input from, and consultation with, impacted stakeholders.

The PRG provides key information from an operational, educational, change and logistics perspective into the planning, through the design and construction phases of the project.

The PRG will receive project briefings and key progress updates on project progress to support its responsibilities in assisting to communicate updates to school staff, parents and stakeholders in the wider local community.

The Project Reference Group will be conducted as two separate groups during the development and delivery of all projects:

#### (a) Project Reference Group – Planning

A nominated group (limited to 10) will participate in workshops to develop the Educational Principles and Education Rationale which will inform the Functional Design Brief. These workshops are chaired by the SINSW Senior Project Director (or delegate) and may be facilitated by an Education Consultant. This activity will inform the development of the building design.

(b) Project Reference Group - Delivery

The purpose of the group is to seek input and inform design processes and provide operational requirements and information to help minimise the impact of the project on school operations. These workshops are chaired by the Senior Project Director (or delegate) and may be facilitated by the appointed architectural consultant, as required. The PRG will provide key information from an operational and logistics perspective to assist project delivery.

Specifically to communications and engagement related matters, the PRG will also:

- Provide a forum for discussion and exchange of information relating to the planning and delivery of the project
- Identify local issues and concerns to assist the project team with the development of mitigation strategies to manage and minimise construction and environmental impacts to the school community and local residents
- Provide feedback to the communications and community engagement team on key messages and communications and engagement strategies
- Provide advice on school engagement activities
- Assist to disseminate communications to the school community and other stakeholders.

As per all department led delivery projects, the PRG acts as a consultative forum and not a decision-making forum for the planning and delivery of this school infrastructure.





Figure 2 below maps how the department and SINSW will communicate both internally and externally.





### 5. Stakeholders

The stakeholder list below summarises who will be consulted during the design and construction phase via ongoing face to face meetings, communications collateral and digital engagement methods.

### Table 2: Stakeholders

| Stakeholders   | Interest and involvement  |  |  |
|--|---|--|--|
| <ul> <li>Local Members of Parliament:</li> <li>Stephen Kamper, NSW Member for Rockdale</li> <li>Hon. Linda Burney MP</li> </ul>  | <ul> <li>Meeting the economic, social and environmental objectives of state and federal governments</li> <li>Delivering increased public education capacity on time</li> <li>Delivering infrastructure that meets expectations</li> <li>Addressing local issues such as traffic, congestion and public transport solutions</li> </ul>   |  |  |
| <ul> <li>Government agencies and peak bodies:</li> <li>Transport for NSW, including Roads and<br/>Maritime Services NSW</li> <li>Fire and Rescue NSW</li> <li>NSW Department of Education</li> <li>NSW Department of Planning, Industry and<br/>Environment</li> <li>NSW Environmental Protection Authority</li> <li>NSW Rural Fire Service</li> <li>Sydney Water</li> <li>NSW Heritage Council</li> <li>NSW Office of Environment, Energy and Science</li> <li>NSW Department of Premier and Cabinet</li> </ul> | <ul> <li>Traffic and congestion on the local road system</li> <li>Adequate public transport options and access</li> <li>Ensuring new infrastructure meets standard requirements for safety and fire evacuation</li> <li>Ensuring the development is compliant</li> <li>Ensuring the development does not impact heritage items</li> <li>Easing overcrowding in local schools</li> </ul> |  |  |
| <ul> <li>Cultural and heritage interest:</li> <li>La Perouse Local Aboriginal Land Council</li> <li>Local heritage groups</li> </ul>   | <ul> <li>Discovery of cultural and heritage artefacts during<br/>construction</li> </ul>  |  |  |
| <ul> <li>Local Council – Bayside City Council</li> <li>Mayor, Joe Awada</li> <li>General Manager, Meredith Wallace</li> <li>Councillors</li> </ul>   | <ul> <li>Schedule for construction and opening of school</li> <li>Impacts to the local community including noise, congestion and traffic</li> <li>Shared use of community spaces</li> <li>Providing amenities to meet increase population density</li> </ul>  |  |  |
| School community         Principal         Teachers         Staff         Parents and carers         Students  | <ul> <li>Safe pedestrian and traffic access to the temporary school during construction</li> <li>Plans for enrolled students as the school expands</li> <li>Construction impacts and how these will be minimised</li> <li>Quality of infrastructure and resources upon project completion</li> <li>How to access the new school once completed</li> </ul>                               |  |  |

| Stakeholders   | Interest and involvement   |  |
|--|--|--|
| <ul> <li>Nearby public schools</li> <li>Arncliffe West Infants School</li> <li>Arncliffe Public School</li> <li>Rockdale Public School</li> <li>Brighton-Le-Sands Public School</li> <li>Botany Public School</li> <li>Botany Public School</li> <li>St Francis Xavier's Catholic Primary School</li> <li>Cairnsfoot Special Education School</li> <li>St George Special Education School</li> <li>North Brighton Preschool</li> </ul> | <ul> <li>Impact on school resources</li> <li>Impact on current students</li> <li>Implications for teaching staff</li> <li>Possible impacts on enrolments and catchment area</li> <li>Opportunities to view the new facilities</li> </ul>   |  |
| Adjoining affected landowners and businesses<br>Four residential streets adjacent to the school<br>(Tancred Ave, Jacobson Ave, Beehag St, Owen Ave)<br>There are no registered businesses in the direct<br>vicinity.   | <ul> <li>Noise and truck movements during construction</li> <li>Increased traffic and congestion on nearby streets</li> <li>Local traffic and pedestrian safety</li> <li>Changed traffic conditions during pick-up and drop-off</li> <li>Shared use of school facilities and amenities</li> <li>Environmental impacts during construction</li> <li>Visual amenity</li> </ul> |  |
| <ul> <li>Community groups</li> <li>Rockdale Bushcare</li> <li>Rockdale Wetlands Preservation Society</li> <li>Botany Bay and Catchment Alliance</li> <li>St George Family Support Services Inc</li> </ul>  | <ul> <li>Noise and truck movements during construction</li> <li>Increased traffic and congestion on nearby streets</li> <li>Local traffic and pedestrian safety</li> <li>Changed traffic conditions during pick-up and drop-off</li> <li>Shared use of school facilities and amenities</li> </ul>  |  |

#### 6. Engagement Approach

From 30 March 2020, the way we communicate has temporarily changed, please refer to Appendix A for a detailed up to date list of changed communication methods and tools. This particularly refers to face to face communication channels such as door knocks, information booths/sessions, face to face meetings and briefings.

The key consideration in delivering successful outcomes for this project is to make it as easy as possible for anyone with an interest to find out what is going on. In practice, the communications approach across all levels of engagement will involve:

- Using uncomplicated language
- Taking an energetic approach to engagement
- Encouraging and educating whenever necessary
- Engaging broadly including with individuals and groups that fall into harder to reach categories
- Providing a range of opportunities and methods for engagement
- Being transparent
- Explaining the objectives and outcomes of planning and engagement processes.

In addition to engagement with government departments and agencies and the local council, two distinct streams of engagement will continue for the project as follows:

- School community for existing schools being upgraded, or surrounding schools for new schools, and
- Broader local community.

This allows:

- School-centric involvement from school communities (including students, parents/caregivers, teachers, admin staff) unencumbered by broader community issues, and
- Broad community involvement unencumbered by school community wants and needs. Broad community stakeholders include local residents, neighbours and local action groups.

#### 6.1. General community input

Members of the general public impacted by the construction phase are able to enquire and complain about environmental impacts via the following channels:

- Information booths and information sessions held at the school or local community meeting place, and advertised at least 7 days before in local newspapers, on our website and via letterbox drops
- 1300 number that is published on all communications material, including project site signage
- School Infrastructure NSW email address that is published on all communications material, including project site signage

Refer to Section 8.5 of this document for detail on our enquiries and complaints process.

A number of tools and techniques will be used to keep stakeholders and the local community involved as summarised in table 3 below.

For reference, project high level milestones during the delivery phase include:

- Site establishment/early works
- Commencement of main works construction
- Term prior to project completion
- Project completion
- First day of school following project completion
- Official opening

#### Table 3: School Infrastructure NSW Communications Tools

| Communications<br>Tool             | Description of Activity   | Frequency   |
|------------------------------------|---|---|
| 1300 community<br>information line | The free call 1300 482 651 number is published on all<br>communication materials and is manned by SINSW.<br>All enquiries that are received are referred to the appointed C&E<br>Manager and/or Senior Project Director as required and logged in<br>our CRM.<br>Once resolved, a summary of the conversation is updated in the<br>CRM.   | Throughout the life of<br>the project and<br>accessible for 12<br>months post<br>completion     |
| Advertising (print)                | Advertising in local newspapers is undertaken with at least 7 days' notice of significant construction activities, major disruptions and opportunities to meet the project team or find out more at a face to face event.   | At project milestones<br>or periods of disruption   |
| Call centre scripts                | High level, project overview information provided to external organisations who may receive telephone calls enquiring about the project, most namely stakeholder councils.  | Throughout the project<br>when specific events<br>occur or issues are<br>raised by stakeholders |
| Community contact<br>cards         | <ul> <li>These are business card size with all the SINSW contact information.</li> <li>The project team/ contractors are instructed to hand out contact cards to stakeholders and community members enquiring about the project. Cards are offered to school administration offices as appropriate.</li> <li>Directs all enquiries, comments and complaints through to our 1300 number and School Infrastruture NSW email address.</li> </ul> | Throughout the life of<br>the project and<br>available 12 months<br>post completion             |
| CRM database                       | <ul> <li>All projects are created in SINSW's Customer Relationship<br/>Management system – Darzin - at project inception.</li> <li>Interactions, decisions and feedback from stakeholders are<br/>captured, and monthly reports generated.</li> <li>Any enquiries and complaints are to be raised in the CRM and<br/>immediately notified to the Senior Project Director, Project<br/>Director and Community Engagement Manager.</li> </ul>   | Throughout the life of<br>the project and<br>updated for 12 months<br>post completion           |
| Display boards                     | A0 size full colour information boards to use at info sessions or to<br>be permanently displayed in appropriate places (school admin<br>office for example).  | As required   |
| Door knocks                        | Provide timely notification to nearby residents of upcoming<br>construction works, changes to pedestrian movements, temporary<br>bus stops, expected impacts and proposed mitigation.<br>Provide written information of construction activity and contact<br>details.   | As required prior to periods of construction impacts  |
| Face-to-face<br>meetings/briefings | Activities include meeting, briefings and "walking the site" to<br>engage directly with key stakeholders, directly impacted residents<br>and business owners and the wider community.   | As required/if<br>necessary   |

| Communications<br>Tool            | Description of Activity   | Frequency                                |
|-----------------------------------|---|--|
| FAQs                              | Set of internally approved answers provided in response to<br>frequently asked questions. Used as part of relevant stakeholder<br>and community communication tools. These are updated as<br>required, and included on the website if appropriate.  | Throughout the life of the project       |
| Information booths                | Information booths are held locally and staffed by a project team member to answer any questions, concerns or complaints on the project.  | At project milestones<br>and as required |
|                                   | Info booths are scheduled from the early stages of project delivery through to project completion.  |  |
|                                   | Information booths are to be held both at the school/ neighbouring school, as well for the broad community:   |  |
|                                   | <ul> <li>School information booths are held at school locations at<br/>times that suit parents and caregivers, with frequency to be<br/>aligned with project milestones and as required.</li> </ul>   |  |
|                                   | <ul> <li>Community information booths are usually held at local<br/>shopping centres, community centres and places that are<br/>easily accessed by the community. They are held at<br/>convenient times, such as out of work hours on weekdays<br/>and Saturday's.</li> </ul>   |  |
|                                   | Collateral to be provided include community contact cards, latest project notification or update, with internal FAQs prepared.  |  |
|                                   | All liaison to be summarised and loaded in the CRM.   |  |
|                                   | Notice of at least 7 days to be provided.   |  |
| Information sessions<br>(drop in) | Information sessions are a bigger event than an info booth, held<br>at a key milestone or contentious period. We have more<br>information on the project available on display boards/ screens<br>and an information pack handout – including project scope,<br>planning approvals, any impacts on the school community or<br>residents, project timeline, FAQs. | As required                              |
|                                   | Members from the project and communications team will be available to answer questions about the project.   |  |
|                                   | These events occur after school hours on a week day (from 3pm – 7pm to cover working parents).  |  |
|                                   | All liaison summarised and loaded on the CRM.   |  |
| Information pack                  | A 4 page A4 colour, fold out flyer that can include:  | As required                              |
|                                   | Project scope   |  |
|                                   | Project update  |  |
|                                   | FAQs  |  |
|                                   | Contact information   |  |
|                                   | Project timeline  |  |
|                                   | To be distributed at info sessions or at other bigger events/<br>milestones in hard copy and also made available electronically.  |  |

| Communications<br>Tool                                     | Description of Activity  | Frequency   |
|--|--|---|
| Media releases/events                                      | Media releases are distributed upon media milestones. They<br>promote major project milestones and activities and generate<br>broader community awareness.   | <ul> <li>Media milestones:</li> <li>Project<br/>announcement</li> <li>Concept design<br/>completion</li> <li>Planning approval<br/>lodged</li> <li>Planning approval<br/>granted</li> <li>Construction<br/>contract tendered</li> <li>Construction<br/>contract awarded</li> <li>SOD turning<br/>opportunity</li> <li>Handover</li> <li>Official opening</li> </ul> |
| Notifications  | <ul> <li>A4, single or double sided, printed in colour that can include<br/>FAQs if required</li> <li>Notifications are distributed under varying templates with different<br/>headings to suit different purposes:</li> <li>Works notification are used to communicate specific<br/>information/ impacts about a project to a more targeted<br/>section of the community. This template doesn't have an<br/>image so it can be more appropriately targeted for matters<br/>like hazardous material.</li> <li>Project update is used when communicating milestones and<br/>higher level information to the wider community i.e. project<br/>announcement, concept design/DA lodgement, construction<br/>award, completion. Always includes the project summary,<br/>information booths/ sessions if scheduled, progress summary<br/>and contact info.</li> </ul> | As required according<br>to the construction<br>program.<br>Distibuted via letterbox<br>drop to local residents<br>and via the school<br>community at least 5-7<br>days prior to<br>construction activities<br>or other milestones<br>throughout the life of<br>the project. Specific<br>timings indicated in<br>table 5 – Section 8.                               |
| Photography, time-<br>lapse photography and<br>videography | Captures progress of construction works and chronicles particular<br>construction activities. Images to be used in notifications,<br>newsletters and report, on the website and Social Media<br>channels, at information sessions and in presentations.<br>Once the project is complete, SINSW will organise photography of<br>external and internal spaces to be used for a range of<br>communications purposes.  | Project completion<br>(actual photography<br>and video of completed<br>project)<br>Prior to project<br>completion - artist<br>impressions,<br>flythrough, site plans<br>and contruction<br>progress images are<br>used  |
| Presentations  | Details project information for presentations to stakeholder and community groups.   | As required   |

| Communications<br>Tool                     | Description of Activity  | Frequency  |
|--|--|--|
| Priority<br>correspondence                 | Ministerial (and other) correspondence that is subject to strict<br>response timeframes. Includes correspondence to the Premier,<br>Minister, SINSW and other key stakeholders. SINSW is<br>responsible for drafting responses as requested within the<br>required timeframes.   | As required  |
| Project Reference<br>Group                 | SINSW facilitated Project Reference Group sessions providing<br>information on the design solution, construction activities, project<br>timeframes, key issues and communication and engagement<br>strategies.   | Meets every month or<br>as required<br>More information on<br>the PRG is detailed in<br>Section 4      |
| Project signage                            | A0 sized, durable aluminium signage has been installed at<br>Kyeemagh Public School<br>Provides high level information including project scope, project<br>image and SINSW contact information.<br>Fixed to external fencing/ entrances etc. that are visible and is<br>updated if any damage occurs.  | Throughout the life of<br>the project and<br>installed for 12 months<br>post completion                |
| Site visits                                | Demonstrate project works and progress and facilitate a maintained level of interest in the project. Includes media visits to promote the reporting of construction progress.  | As required  |
| School Infrastructure<br>NSW email address | Provide stakeholders and the community an email address linking direct to the Community Engagement team. Email address (schoolinfrastructure@det.nsw.edu.au) is published on all communications materials.   | Throughout the life of the project   |
| School Infrastructure<br>NSW website       | A dedicated project page for Kyeemagh Public School is located<br>on the SINSW website –<br><u>https://www.schoolinfrastructure.nsw.gov.au/projects/k/kyeemagh-<br/>public-school.html</u>   | Updated at least<br>monthly and is live for<br>at least 12 months post<br>completion of the<br>project |
| Welcome pack/ thank<br>you pack            | <ul> <li>At project completion the following flyers are utilised:</li> <li>Welcome pack – project completion for school community - A 2 to 4 page A4 flyer which is provided to the school community on the first day/week they are returning to school when new facilities are opening, or attending a new school. Includes project overview, map outlining access to the school and key locations, FAQs, contact information.</li> <li>Thank you pack – A 2 to 4 page A4 flyer tailored to the local residents to thank them for their patience and support of the project.</li> </ul> | Project completion only  |

## 7. Engagement Delivery Timeline

The following engagement delivery timeline maps tailored communications tools and activities by key milestone.

#### Table 4: Engagement timeline

| Project Phase /<br>milestone  | Target Audiences                                     | Proposed communication<br>tools / activities / purpose<br>as per Table 3  | Timing / implementation  |
|---|--|---|--|
| Site establishment and<br>main construction works,<br>including but not limited<br>to:<br>Works commenced<br>Demolition<br>Asbestos removal<br>Remediation<br>Works commenced<br>Key impact periods –<br>noise, dust, traffic,<br>vibration | School community<br>Local residents<br>Local Council | <ul> <li>Request for feedback on<br/>management strategies<br/>for high noise works</li> <li>Notifications – for school<br/>community and residents</li> <li>Door knocks to directly<br/>impacted residents</li> <li>Info booths/ sessions</li> <li>Website updates</li> <li>Project updates</li> <li>Face to face meetings if<br/>required</li> <li>Advertising of any events<br/>and any periods of high<br/>disruption</li> <li>SINSW email address<br/>and hotline</li> <li>Media release</li> <li>Contact cards</li> <li>FAQs</li> <li>Project signage</li> <li>Alternative methods where<br/>applicable:</li> <li>No doorknock – letterbox<br/>drop with 'door knock'<br/>letter template</li> <li>Digital information booth<br/>(if required) with<br/>information boards and<br/>pack online</li> </ul> | July 2020 to December<br>2021<br>(at key construction<br>events as required, as per<br>our notification process in<br>Table 5) |
| Term prior to project<br>completion   | School community<br>Local residents                  | <ul> <li>Info session</li> <li>Display boards</li> <li>Info pack</li> <li>Notifications as required to indicate remaining construction still to occur</li> <li>Website updates</li> </ul>   | 2021   |

| Project Phase /<br>milestone       | Target Audiences                    | Proposed communication<br>tools / activities / purpose<br>as per Table 3   | Timing / implementation                                  |
|------------------------------------|-------------------------------------|--|--|
|                                    |                                     | <ul> <li>Alternative methods where applicable:</li> <li>Digital information booth (if required) with information boards and pack online</li> </ul>   |  |
| Handover and welcome to new school | School community<br>Local residents | <ul> <li>Site visits</li> <li>Media release</li> <li>Welcome pack</li> <li>Thank you pack</li> <li>Photography/videography</li> <li>Website update</li> <li>SINSW email address<br/>and hotline</li> </ul> | 2022   |
| Opening                            |                                     | <ul> <li>Media release</li> <li>Official opening ceremony</li> </ul>   | TBC – at school<br>discrection                           |
| Post-opening                       | All                                 | <ul> <li>Planned</li> <li>Website remains live</li> <li>Project signage remains installed</li> <li>1300 phone and email still active, and CRM still maintained for complaints and enquiries.</li> </ul>    | 2022-2023 (12 months<br>post construction<br>completion) |
### 8. Protocols

#### 8.1. Media engagement

SINSW manages all media relations activities, and is responsible for:

- Responding to all media enquiries and instigating all proactive media contact.
- Media interviews and delegation to SINSW media spokespeople who are authorised to speak to the media on behalf of the project
- Informing the Minister's Office and SINSW project team members and communications representatives of all media relations activities in advance and providing the opportunity to participate in events where possible.

### 8.2. Site visits

SINSW in partnership with Schools Operations and Performance organises and hosts guided project site tours and media briefings as required by the Minister's Office. The Project Team will ensure the required visitor site inductions are undertaken and that all required Personal Protective Equipment (PPE) is worn.

For media site visits and events, SINSW creates, or contributes to, the production of an event pack. This will include an event brief, media release, speaking notes and Q&As.

#### 8.3. Social, online and digital media

SINSW initiates and maintains all social and online media channels. These channels can include Facebook, Twitter, LinkedIn and the website. The SINSW Online Content Team upload to the SINSW website.

### 8.4. Notification process

Notifications (titled works notifications or project updates as per Table 3) are SINSW's prescribed notification requirement and are the primary mechanism to inform the community and key stakeholders about the impact of school construction on the local area. Notifications provide advance warning of activities and planned disruptions, as per the notice periods in Table 5 below, allowing stakeholders and community members to plan for the impacts and make alternative arrangements where required. Notifications are distributed in person via door knocks, via letterbox drop, via the school and electronically via email.

The CE Manager advises the project team of the relevant notification requirements and timeframes to be met. The team obtains the information necessary to meet these timeframes by:

- Having oversight of the project delivery program
- Visiting site as required
- Attending and participating in construction meetings, planning meetings, and Risk and Opportunity workshops.

### Table 5: Notifications periods

| Works activity   | Minimum community notification period |
|--|---------------------------------------|
| Notification to communities following major incident                                   | Same day                              |
| Emergency works/unforeseen events  | Same day                              |
| Contamination management and notification  | Within 48 hours                       |
| Upcoming works notification (minimum disruption)                                       | 5- 7 days                             |
| Invitation/notification of community event (e.g. info booth)                           | 5 – 7 days                            |
| Notifications regarding traffic changes, parking impacts, road closures, major detours | 10 – 14 days                          |
| Pedestrian route changes and other impacts   | 10 – 14 days                          |

| Works activity   | Minimum community notification period |
|--|---------------------------------------|
| Notifications regarding operational changes for the school community (school drop-off points, entry and exit points) | 10 - 14 days                          |
| Major construction impacts (out of hours/ significant noise/ demolition)   | 10 – 14 days                          |
| Major impacts to school community e.g. relocation to temporary school  | 6 months                              |

#### 8.5. Enquiries and complaints management

SINSW manages enquiries (called interactions in our CRM, Darzin), and complaints in a timely and responsive manner.

Prior to project delivery, a complaint could be related to lack of community consultation, design of the project, lack of project progress, etc.

During project delivery, a complaint is defined as in regards to construction impacts – *such as* – safety, dust, noise, traffic, congestion, loss of parking, contamination, loss of amenity, hours of work, property damage, property access, service disruption, conduct or behaviour of construction workers, other environmental impacts, unplanned or uncommunicated disruption to the school.

If a phone call, email or face- to- face complaint is received during construction, they must be logged in our CRM, actively managed, closed out and resolved by SINSW within 24-48 hours.

As per our planning approval conditions, a complaints register is updated monthly and is publicly available on the project's website page on the SINSW website.

If the complainant is not satisfied with SINSW response, and they approach SINSW for rectification, the process will involve a secondary review of their complaint as per the outlined process.

Complaints will be escalated when:

- An activity generates three complaints within a 24-hour period (separate complainants).
- Any construction site receives three different complaints within a 24-hour period.
- A single complainant reports three or more complaints within a three day period.
- A complainant threatens to escalate their issue to the media or government representative.
- The complaint was avoidable
- The complaint relates to a compliance matter.

Complaints will be first escalated to the Senior Manager, Community and Engagement or Director of Communications for SINSW as the designated complaints handling management representatives for our projects. Further escalation will be made to the Executive Director, Office of the Chief Executive to mediate if required.

If a complaint still cannot be resolved by SINSW to the satisfaction of the complainant, we will advise them to contact the NSW Ombudsman - <u>https://www.ombo.nsw.gov.au/complaints</u>.

The below table summarises timeframes for responding to enquiries and complaints, through each correspondence method:

#### Table 6: Complaint and enquiry response time

| Complaint                        | Acknowledgement times   | Response times  |
|----------------------------------|---|---|
| Phone call during business hours | At time of call – and agree<br>with caller estimated<br>timeframe for resolution. | Complaint to be closed out within 48 hours.<br>If not possible, continue contact, escalate as required<br>and resolve within 7 business days. |
| Phone call after hours*          | Within two (2) hours of receiving message upon returning to office.               | Following acknowledgement, complaint to be closed out within 48 hours. If not possible, continue contact,                                     |

| Complaint                        | Acknowledgement times   | Response times  |  |  |
|----------------------------------|---|---|--|--|
|                                  |   | escalate as required and resolve within 7 business days.  |  |  |
| Email during business hours      | At time of email (automatic response)   | Complaint to be closed out within 48 hours. If not possible, continue contact, escalate internally as required and resolve within 7 business days.  |  |  |
| Email outside of business hours  | At time of email (automatic response)   | Complaint to be closed out within 48 hours (once<br>return to business hours). If not possible, continue<br>contact, escalate internally as required and resolve<br>within 7 business days. |  |  |
| Interaction/ Enquiry             |   |   |  |  |
| Phone call during business hours | At time of call – and agree<br>with caller estimated<br>timeframe for response. | Interaction to be logged and closed out within 7 business days.   |  |  |
| Phone call after hours           | Within two (2) hours of receiving message upon returning to office.             | Interaction to be logged and closed out within 7 business days.   |  |  |
| Email during business hours      | At time of email (automatic response)   | Interaction to be logged and closed out within 7 business days.   |  |  |
| Email outside of business hours  | At time of email (automatic response)   | Interaction to be logged and closed out within 7 business days.   |  |  |
| Letter                           | N/A   | Interaction to be logged and closed out within 10 business days following receipt.  |  |  |

The below diagram outlines our internal process for managing complaints.

#### Figure 3 - Internal Complaints Process



#### 8.5.1. Disputes involving compensation and rectification

School Infrastructure NSW is committed to working with the school and broader community to address concerns as they arise. Where disputes arise that involve compensation or rectification, the process for resolving community enquiries and complaints will be followed to investigate the dispute. Depending upon the results of the investigation, School Infrastructure NSW may seek legal advice before proceeding.

#### 8.6. Incident management

An incident is an occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance. Material harm is harm that:

- (c) involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial; or
- (d) results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).

#### 8.6.1. Roles and responsibilities following an incident

In the event of an incident, once emergency services are contacted, the incident must be immediately reported to the SINSW Senior Project Director who will inform:

- SINSW Executive Director
- SINSW C&E Manager
- SINSW Senior Manager, C&E
- SINSW Communications Director

SINSW Communications Director will:

 Lead and manage all communications with the Minister's office in the event of an incident, with assistance as required

- Direct all communications with media to the SINSW Media Manager in the first instance for management
- Notify all other key project stakeholders of an incident.

The school and local community will be notified within 24 hours in the event of an incident, as per our notification timelines in Table 5.

The SINSW Senior Project Director will issue a written incident notification to Department of Planning, Industry & Environment (DPIE) (<u>compliance@planning.nsw.gov.au</u>) and Local Council immediately following the incident to set out the location and nature of the incident.

This must be followed within seven days following the incident of a written notification to the Department of Planning, Industry and Environment (<u>compliance@planning.nsw.gov.au</u>) that:

- (e) identifies the development and application number;
- (f) provides details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);
- (g) identifies how the incident was detected;
- (h) identifies when SINSW became aware of the incident;
- (i) identify any actual or potential non-compliance with conditions of consent;
- (j) describes what immediate steps were taken in relation to the incident;
- (k) identifies further action(s) that will be taken in relation to the incident; and
- (I) provides the contact information for further communication regarding the incident (the Senior Project Director).

Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Planning Secretary, SINSW will provide the Planning Secretary and any relevant public authorities (as determined by the Planning Secretary) with a detailed report on the incident addressing all requirements below:

(m) a summary of the incident;

- (n) outcomes of an incident investigation, including identification of the cause of the incident;
- (o) details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
- (p) details of any communication with other stakeholders regarding the incident.

#### 8.7. Reporting process

Throughout the project, data will be recorded on participation levels both face to face and online, a record of engagement tools and activities carried out in addition to queries received and feedback against emerging themes.

Stakeholder and community sentiment will be evaluated throughout to ensure effectiveness of the engagement strategy and to inform future activities.

Reporting will include but not be limited to:

- Stakeholder engagement reporting numbers of forums, participation levels and a summary of the outcomes Community sentiment reporting – outputs of all community engagement activities, including numbers in attendance at events, participation levels and feedback received against broad themes
- Online activity through the project website and via social media
- Media monitoring as part of the proactive media campaign
- Engagement risk register to be updated regularly.

### Appendix A – Changing the way we communicate – community engagement alternative methods

Below are proposed alternatives to our standard mandatory requirements for community engagement effective as of 30 March 2020. These alternatives are proposed to ensure we continue to comply with SSD and DA conditions and that our communities can remain informed about our projects while adhering to social distancing requirements and NSW Health advice.

Our engagement principles for this period should continue to ensure our communications are:

- Simple
- Streamlined
- Accessible.

### Summary of mandatory requirements and alternatives:

Items in **bold** have alternate delivery options.

| SSD CONDITION                   | ALTERNATIVE  |
|---------------------------------|--|
| 1300 community information line | No change  |
| Advertising (print)             | Promote online info session / generic single advert      |
| Call centre scripts             | No change  |
| Community contact cards         | Contractors to hand out as required                      |
| CRM database                    | No change  |
| Display boards                  | Digital version  |
| Door knocks                     | No door knocks, use letterbox drop*                      |
| Face-to-face meetings/briefings | Phone call or teleconferencing                           |
| FAQs                            | No change  |
| Information booths              | No info booths: issue project update instead             |
|                                 | Digital version  |
| Information sessions (drop in)  | Digital version  |
| Information pack                | Digital version  |
| Media releases/events           | No change to media releases, no events to be held        |
| Notifications                   | Distributed to school community via email from Principal |
|                                 | Distributed to near neighbours via letterbox drop*       |

| SSD CONDITION                       | ALTERNATIVE   |
|-------------------------------------|---|
| Photography, time-lapse photography | Source photography if health advice permits                           |
| and videography                     | Use images and time-lapse from similar projects if unable to          |
|                                     | photograph site   |
| Presentations                       | Digital version for PRGs/stakeholder meetings                         |
| Priority correspondence (RML)       | No change   |
| Project Reference Group             | Skype meetings / teleconferencing                                     |
| Project signage                     | No change if production and installation still possible; A4 print out |
|                                     | delivered   |
| Site visits                         | Site visits via phone/video/photography                               |
| School Infrastructure NSW email     | No change   |
| School Infrastructure NSW website   | No change (may publish updates more frequently)                       |
| Welcome pack/ thank you pack        | Welcome pack: Do not issue until school resumes                       |
|                                     | Thank you pack: Issued when project is entirely complete              |

\*alternative may change depending on distributor operations

APPENDIX 10: CONSTRUCTION WASTE MANAGEMENT SUB PLAN

## CONSTRUCTION WASTE MANAGEMENT SUB PLAN (CWMSP)

CEMP APPENDIX 10 SUB PLAN

# **Kyeemagh Public School**

# Jacobson Avenue & Beehag Street, Kyeemagh NSW 2216

E-PLAN-01 (Rev. September 2020) | Approved by Andrew Andreou Uncontrolled copy once printed



taylorau.com.au

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### **1. INTRODUCTION**

### **1.1 PROJECT INFORMATION TABLE**

| PROJECT INFORMATION TABLE |                                    |                       |                                     |  |  |  |
|---------------------------|------------------------------------|-----------------------|-------------------------------------|--|--|--|
| PROJECT NAME              | Kyeemagh Public School             |                       |                                     |  |  |  |
| LOCATION                  | Jacobson & Beehag Streets, k       | (yeemagh NSW 2216     |                                     |  |  |  |
| CLIENT                    | NSW Department of Education        | ו                     |                                     |  |  |  |
| DURATION OF CONTRACT      | 80 Weeks                           |                       |                                     |  |  |  |
| TAYLOR CONTACT INFORMATI  | ON                                 |                       |                                     |  |  |  |
| COMPANY NAME              | Taylor Construction Group Pty      | Ltd                   |                                     |  |  |  |
| ABN                       | 25 067 428 344                     |                       |                                     |  |  |  |
| ADDRESS                   | Level 13, 157 Walker Street, N     | lorth Sydney 2060     |                                     |  |  |  |
| TELEPHONE & FAX           | Ph.: 02 8736 9000 Fax: 02 8        | 736 9090              |                                     |  |  |  |
| POSITION                  | CONTACT NAME                       |                       | PHONE NUMBERS                       |  |  |  |
| CHIEF OPERATING OFFICER   | Clive Wickham                      |                       | 02 8736 9000                        |  |  |  |
| GENERAL MANAGER           | Tim Christie                       |                       | 02 8736 9000                        |  |  |  |
| CONSTRUCTION MANAGER      | Doug Wood                          |                       | 0414 939 854                        |  |  |  |
| SR PROJECT MANAGER        | Steve Ziaziaris                    |                       | 0413 182 641                        |  |  |  |
| SITE MANAGER              | David Pereira                      |                       | 0415 241 170                        |  |  |  |
| HSE MANAGER               | Andrew Andreou                     |                       | 0404 492 614                        |  |  |  |
| SAFETY ADVISOR            | твс                                |                       | твс                                 |  |  |  |
| QUALITY MANAGER           | Stephen Player                     |                       | 02 8736 9000                        |  |  |  |
| CONTRACT ADMINISTRATOR    | Scott Dobson                       |                       | 0414 984 567                        |  |  |  |
| SITE ENGINEER             | Shanil Prasad                      |                       | 0432 870 855                        |  |  |  |
| CADET                     | Daniel Taylor                      |                       | 0458 476 555                        |  |  |  |
| CADET                     | Kurt Dessmann                      |                       | 0431 205 832                        |  |  |  |
| DOCUMENT CONTROL          | NAME & POSITION                    |                       | SIGNATURE & DATE                    |  |  |  |
| PREPARED BY:              | Shanil Prasad – Site Engineer      |                       | 17.09.2020                          |  |  |  |
| REVIEWED BY:              | Steve Ziaziaris – Senior Projec    | ct Manager            | 17.09.2020                          |  |  |  |
| REVIEWED BY:              |                                    |                       |                                     |  |  |  |
| REVISED BY                | REV. No.                           | DATE                  | CHANGES MADE                        |  |  |  |
| Shanil Prasad             | Draft                              | 17.07.20              | Initial draft                       |  |  |  |
| Shanil Prasad             | 1                                  | 29.07.20              | Revised as per comments.            |  |  |  |
| Shanil Prasad             | 2                                  | 30.07.20              | Revised as per additional comments. |  |  |  |
| Shanil Prasad             | 3 31.07.20 Updated condition table |                       |                                     |  |  |  |
| Shanil Prasad             | 4                                  | 4 17.09.20 Revised as |                                     |  |  |  |

### 1.2 PURPOSE OF THE CONSTRUCTION WASTE MANAGEMENT SUB PLAN

Taylor Construction Group Pty Ltd has a documented Quality, Health, Safety and Environmental (QSE) Management System. The management systems are integrated, and this management plan forms part of the Construction Environmental Management Plan (CEMP) and should be read in conjunction with the CEMP.

One of the Environmental Factors Objectives identified in the CEMP is to:

Ensure that wastes are contained and isolated from land, ground and surface water surrounds and treatment or collection does not result in long-term impacts on the natural environment.

With a requirement to:

Identify sources of solid and liquid waste and estimate the proposed amount generated. Propose measures to manage and/ or mitigate impacts.

Further to this, the CEMP details the following Objective and Target relating to Waste Management:

| Obiectives  | Targets   |
|---|---|
| Increase amount of waste being recycled, reduce waste cost. | Eighty-five per cent (85%) of waste to be recycled. |

This plan will provide further details regarding satisfying these items for this project.

### **1.3 DEVELOPMENT CONDITIONS CONSENT**

| Condition | Description   | Page<br>Number                        |
|-----------|---|---------------------------------------|
| B16 (a)   | <ul> <li>The Construction Waste Management Sub-Plan (CWMSP) must address, but not be limited to, the following:</li> <li>(a) detail the quantities of each waste type generated during construction and the proposed reuse, recycling and disposal locations; and</li> </ul>  | Section 2.3<br>Page 7                 |
| B16 (b)   | <ul> <li>The Construction Waste Management Sub-Plan (CWMSP) must address, but not be limited to, the following:</li> <li>(b) removal of hazardous materials, particularly the method of containment and control of emission of fibres to the air, and disposal at an approved waste disposal facility in accordance with the requirements of the relevant legislation, codes, standards and guidelines, prior to the commencement of construction.</li> </ul> | Section 3<br>Appendix 1<br>p9 and p11 |

### 2. GENERAL WASTE MANAGEMENT PLAN

### 2.1 INTRODUCTION

TCG and Subcontractors shall adopt the hierarchy of waste – avoid, reduce, recycle/reprocess and dispose to maximise resource recovery and minimise disposal wherever possible and practical. TCG is responsible for creating and managing the waste management education process, including correct separation of garbage and recycling items. The importance of appropriate waste management practices is to be included in the site induction.

The site will be provided with suitable bins and skips for appropriate collection and separation of waste and recyclables, and these are to be collected with appropriately qualified and licensed waste contractors.

When selecting and using waste recycling and disposal centres, the following factors will be considered:

- Quantity and type of material (including its re-use and recyclability)
- Cost to dispose material
- Geographical location of waste centre
- Legal issues such as if the waste centre is able to lawfully accept the waste material

Recycling and disposal of bulk waste materials will be by excavators, forklifts & cranes to load trucks and transport to the appropriate waste or recycling facility. Excavated materials would be removed off site each day, except where removal is impeded on that day. Stockpiling of materials would involve the provision of a bund and plastic covering over the stockpile, which is secured against wind.

Prior to disposal, wastes must be classified in accordance with the DECCW's Waste Classification Guidelines (April 2008) prior to transporting waste off site. Waste receipts must be kept for legal requirements and details of waste separated and disposed of is to be documented in the Waste and Recycling Register.

TCG will ensure that all waste service providers submit monthly reports on all equipment movements and weights of any waste and recycling products removed from the development.

#### **References:**

- SE-F-23 KPI Monthly Report Form
- E-F-03 Waste and Recycling Register

### 2.2 COMPANY WASTER PROFILE

TCG receives monthly waste statistics reports from its waste management contractor and is able to forecast waste generation estimates for other similar projects from this historical data. The table below summarises waste statistics from five current school works projects being undertaken by TCG in Sydney, having a project value between \$5-30m.

| Project                       | Pendle Hill High<br>School | Willoughby Girls<br>High School | Greenwich Public<br>School | Knox Grammar | Yagoona Public<br>School | All Project<br>Average |
|-------------------------------|----------------------------|---------------------------------|----------------------------|--------------|--------------------------|------------------------|
| Status                        | Completed                  | Completed                       | Completed                  | Complete     | Completed                |                        |
| Waste Record<br>Period (Mths) | 12                         | 11                              | 12                         | 7            | 6                        |                        |
| Total Waste<br>Collected (T)  | 302.49                     | 281.84                          | 294.6                      | 495.62       | 21.26                    | 279.16                 |
| Total Waste<br>Recycled (T)   | 298.54                     | 278.12                          | 291.84                     | 486.59       | 20.54                    | 275.13                 |
| Total Waste<br>Recycled (%)   | 98.70%                     | 98.68%                          | 99.07%                     | 98.18%       | 96.65%                   | 98.25%                 |

| Project                     | Pendle Hill High<br>School | Willoughby Girls<br>High School | Greenwich Public<br>School | Knox Grammar | Yagoona Public<br>School | All Project<br>Average |
|-----------------------------|----------------------------|---------------------------------|----------------------------|--------------|--------------------------|------------------------|
| Total Waste<br>Landfill (T) | 3.94                       | 3.71                            | 2.75                       | 9.0261       | 0.7162                   | 4.03                   |
| Total Waste<br>Landfill (%) | 1.30%                      | 1.32%                           | 0.93%                      | 1.82%        | 3.37%                    | 1.75%                  |

| Project                   | Pendle Hill High<br>School | Willoughby Girls<br>High School | Greenwich Public<br>School | Knox Grammar | Yagoona Public<br>School | All Project<br>Average |
|---------------------------|----------------------------|---------------------------------|----------------------------|--------------|--------------------------|------------------------|
| Vegetation<br>waste       | 9.14%                      | 6.78%                           | 5.5%                       | 0.11%        | 13.33%                   | 6.97%                  |
| Concrete, Brick,<br>Tiles | 30.99%                     | 36.91%                          | 41.41%                     | 20.87%       | 23.33%                   | 30.70%                 |
| Fill/VENM                 | 9.76%                      | 0.92%                           | 3.76%                      | 0.00%        | 0.00%                    | 2.89%                  |
| Asphalt                   | 2.17%                      | 1.37%                           | 1.69%                      | 0.00%        | 0.00%                    | 1.05%                  |
| Timber                    | 18.03%                     | 19.13%                          | 19.40%                     | 37.22%       | 20.00%                   | 22.76%                 |
| Glass                     | 0.00%                      | 0.00%                           | 0.00%                      | 0.00%        | 0.00%                    | 0.00%                  |
| Paper &<br>Cupboard       | 5.95%                      | 10.79%                          | 1.70%                      | 15.32%       | 23.33%                   | 13.22%                 |
| Plastic                   | 3.7%                       | 2.39%                           | 2.49%                      | 0.00%        | 0.00%                    | 1.72%                  |
| Plasterboard              | 11.03%                     | 6.36%                           | 4.28%                      | 15.23%       | 0.00%                    | 7.38%                  |
| Steel / Iron              | 6.51%                      | 11.24%                          | 8.93%                      | 7.82%        | 13.33%                   | 9.57%                  |
| Non -Ferrous<br>Metal     | 0.73%                      | 0.00%                           | 0.00%                      | 0.00%        | 0.00%                    | 0.15%                  |
| Food – Organics           | 0.07%                      | 0.15%                           | 0.18%                      | 0.00%        | 0.00%                    | 0.08%                  |
| Other                     | 0.29%                      | 0.33%                           | 0.27%                      | 0.00%        | 0.00%                    | .0.18%                 |
| Other-Mixed               | 1.63%                      | 3.63%                           | 1.38%                      | 3.44%        | 6.67%                    | 3.35%                  |

This data indicates that the Kyeemagh Public School project could generate a greater than 85% recyclable waste by volume of total construction waste generated, and less than 15% landfill waste. This estimated amount of recyclable waste is above TCG's corporate target of 85%.

### 2.3 ESTIMATED PROJECT WASTE SCHEDULE

The following schedule provides a breakdown of the expected waste for the project based on a comparable project with actual waste records.

| Project                     | Comparable Project<br>Pendle Hill High<br>School (%) | Comparable<br>Project<br>Pendle Hill High<br>School (T) | Recycle or Disposal<br>Destination & EPA<br>Licence | Recycle or Disposal Address            |
|-----------------------------|--|---|---|--|
| Total Waste<br>Recycled (%) | 98.70%   | 298.55  |   |  |
| Total Waste<br>Landfill (%) | 1.30%  | 3.94  |   |  |
| Vegetation<br>Waste         | 9.14%  | 27.64   | Cleanaway 20937                                     | 35-37 Frank St, Wetherill Park         |
| Concrete, Brick,<br>Tiles   | 30.99%   | 93.75   | Boral 11815   | 38a Wildermere Rd, Wetherill<br>Park   |
| Fill/VENM                   | 9.76%  | 29.51   | Cleanaway 20937                                     | 35-37 Frank St, Wetherill Park         |
| Asphalt                     | 2.17%  | 6.58  | Boral 11815   | 38a Wildermere Rd, Wetherill<br>Park   |
| Timber                      | 18.03%   | 54.55   | Cleanaway 20937                                     | 35-37 Frank St, Wetherill Park         |
| Glass                       | 0.00%  | 0   | Dump It Centre                                      | 13 Long Street, Smithfield<br>NSW 2164 |
| Paper &<br>Cupboard         | 5.95%  | 18  | Grima 20648   | 88 Redfern St, Wetherill Park          |
| Plastic                     | 3.70%  | 11.19   | Grima 20648   | 88 Redfern St, Wetherill Park          |
| Plasterboard                | 11.03%   | 33.35   | Grima 20648   | 88 Redfern St, Wetherill Park          |
| Steel / Iron                | 6.51%  | 19.69   | Sell & Parker 11556                                 | 45 Tattersall Rd, Kings Park           |
| Non-Ferrous<br>Metal        | 0.73%  | 2.20  | Sell & Parker 11556                                 | 45 Tattersall Rd, Kings Park           |
| Food - Organics             | 0.07%  | 0.21  | Dump It Centre                                      | 13 Long Street, Smithfield<br>NSW 2164 |
| Other                       | 0.29%  | 0.87  | Dump It Centre                                      | 13 Long Street, Smithfield<br>NSW 2164 |
| Other - Mixed               | 1.63%  | 4.94  | Dump It Centre                                      | 13 Long Street, Smithfield<br>NSW 2164 |



### 2.4 WASTE & RECYCLING REGISTER

This below register was used to collate the information above. Taylor have ceased using dump it. Bing industries are now the preferred supplier for bins.

| DUM   | PIT                                  | €                             |                        |                                  | NTRE          |  |  |  |  |
|---|--------------------------------------|-------------------------------|------------------------|----------------------------------|---------------|--|--|--|--|
| Gieat   |                                      | Taylo                         | r Construction (       | iroup                            |               |  |  |  |  |
| Site  |                                      | 1                             | 906 - Pendle Hi        |                                  |               |  |  |  |  |
| Site Address                                  |                                      |                               | Pendle Way             |                                  |               |  |  |  |  |
| Month - Start                                 | 1/03/20                              | Finish                        | 31/03/20               |                                  |               |  |  |  |  |
| Construction &<br>Demoîtion Waste<br>Material | Total Waste<br>Generated<br>(Tornes) | Total<br>Recycled<br>(Tonnes) | Destination            | Total To<br>Landfill<br>(Tonnes) | Destination   |  |  |  |  |
| Vogetation Waste                              | 0.05                                 | 0.05                          | Clearoway<br>20937     | 0.00                             |               |  |  |  |  |
| Concrete, Bricks, Tiles                       | 15.01                                | 15.01                         | Boral<br>31815         | D.00                             |               |  |  |  |  |
| FILVENIA                                      | 13.55                                | 13.55                         | Cleanarvey<br>32937    | 0.00                             |               |  |  |  |  |
| Asphalt                                       | 0.00                                 | 0.00                          | Roral<br>22525         | 0.00                             |               |  |  |  |  |
| Timber  | 1.56                                 | 1.56                          | Clean/Jway<br>20237    | 0.00                             |               |  |  |  |  |
| Glass   | 0.00                                 | 0.00                          | Clearativey<br>20937   | 0.00                             |               |  |  |  |  |
| Paper & Cardboard                             | 0.41                                 | 0.41                          | Vicy-4100              | 0.00                             |               |  |  |  |  |
| Plantic                                       | 0.69                                 | 0.69                          | Cleanoway<br>20937     | 0.00                             |               |  |  |  |  |
| Plasterboard                                  | 2.38                                 | 2.58                          | Clearioway<br>20237    | D.00                             |               |  |  |  |  |
| Steel / Iron                                  | 0.94                                 | 0.94                          | Sell & Parker<br>11556 | 0.00                             |               |  |  |  |  |
| Non-ferrous metal                             | 0.00                                 | 0.00                          | 11557                  | 0.00                             |               |  |  |  |  |
| Food - Organics                               | 0.00                                 | 0.00                          | Suez - 5055            | 0.00                             | Suez - 5065   |  |  |  |  |
| Other - mixed                                 | 0.38                                 | 0.00                          | 5ee2 - 12889           | 0.38                             | 5eez - 12889  |  |  |  |  |
| TOTALS  | 34.97                                | 34.59                         |                        | 0.38                             |               |  |  |  |  |
| Percentage                                    | 100.00%                              | 98.91%                        |                        | 1.09%                            |               |  |  |  |  |
| Office/Crib Waste<br>Material                 | Total Waste<br>Generated<br>(Tornes) | Total<br>Recycled<br>(Tonnes) |                        | Total To<br>Landfill<br>(Tonnes) |               |  |  |  |  |
| General Waste                                 | 0.00                                 | 0.00                          |                        | 0.00                             |               |  |  |  |  |
| Paper & Cardboard<br>Comingled                | 00.0                                 | 0.00                          |                        | 0.00                             |               |  |  |  |  |
| Plastic                                       | 0.00                                 | 0.00                          |                        | 0.00                             |               |  |  |  |  |
| Dry Waste                                     | 0.00                                 | 0.00                          |                        | 0.00                             |               |  |  |  |  |
| Organics<br>TOTALS                            | 0.00                                 | 0.00                          |                        | 0.00                             |               |  |  |  |  |
| Destination & EPA Licence                     | No.                                  | Size &                        | ádress                 | Watte                            | ianon         |  |  |  |  |
| Boral Recycling Pty Ltd (We                   | etheril Park) -                      | Ma Widemare P                 | d. Wetherd Park        | Concrete.                        | Seick, Tilea  |  |  |  |  |
| Cleanoway ResourceCo FPI                      | F Pty Ltd -                          | 25-27 Frank St.               | Wether II Park         | Vegetation.                      | FIL/VENM/     |  |  |  |  |
| Suiz Resources and Recover                    | ery Centre                           | OW HILLING                    | Olympic Park           | Organics                         | /LindR        |  |  |  |  |
| Foirfield City Council - Sust                 | tain a chie                          | Cry Hassa I St. 8             | Widencre Rd,           | Cae                              | crete         |  |  |  |  |
| Voy Paper Pty Ltd - 4300                      |                                      | 6 Herbert Pla                 | ce, Smithfield         | Carilboard, Paper                |               |  |  |  |  |
| Soll and Parker Pty Ltd - 13                  | 555                                  | 45 Tatlerad                   | ld, Kings Park         | Netals                           |               |  |  |  |  |
| Suez Recycling & Recovery                     | Pty Ltd - 12888                      | 725 Elisabeth 0               | r, Kenya Creek         | Hazandous Ag                     | sbestas Waste |  |  |  |  |

The below register will be utilised through the project in order to track the waste produced on the project and provide a progressive benchmark score in order to track against overall goal of 85% recycled waste.

|  | Monthly Waste Report<br>Ironmark/Taylor Construction Group<br>Site: Sydney Opera House, SYDNEY |        |        |         |         |         |         |         |         |         |         |         |         |         |
|--|--|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Waste Type (tonnes)                        | Apr-20   | May-20 | Jun-20 | Jul-20  | Aug-20  | Sep-20  | Oct-20  | Nov-20  | Dec-20  | Jan-21  | Feb-21  | Mar-21  | Apr-21  | Totals  |
| Recyclable Bricks/ Tiles                   | 0.000  | 2.400  | 1.512  |         |         |         |         |         |         |         |         |         |         | 3.912   |
| Recyclable Concrete                        | 1.380  | 1.500  | 0.945  |         |         |         |         |         |         |         |         |         |         | 3.825   |
| Recyclable Soil / Sand / Rubble Fines      | 1.288  | 1.400  | 0.882  |         |         |         |         |         |         |         |         |         |         | 3.570   |
| Recyclable Metals (ferrous)                | 2.300  | 5.000  | 3.150  |         |         |         |         |         |         |         |         |         |         | 10.450  |
| Recyclable Metals (non-ferrous)            | 0.000  | 0.750  | 0.945  |         |         |         |         |         |         |         |         |         |         | 1.695   |
| Recyclable Timber                          | 3.450  | 5.700  | 2.835  |         |         |         |         |         |         |         |         |         |         | 11.985  |
| Recyclable Green Waste                     | 0.000  | 0.300  | 0.945  |         |         |         |         |         |         |         |         |         |         | 1.245   |
| Recyclable Cardboard / Paper               | 0.782  | 2.200  | 1.260  |         |         |         |         |         |         |         |         |         |         | 4.242   |
| Recyclable Plastic                         | 0.874  | 2.100  | 0.945  |         |         |         |         |         |         |         |         |         |         | 3.919   |
| Recyclable Plasterboard                    | 0.460  | 0.000  | 0.630  |         |         |         |         |         |         |         |         |         |         | 1.090   |
| General Waste (landfill)                   | 0.920  | 2.000  | 1.260  |         |         |         |         |         |         |         |         |         |         | 4.180   |
|  |  |        |        |         |         |         |         |         |         |         |         |         |         |         |
| Total Recycled Waste (tonnes)              | 10.534   | 21.350 | 14.049 | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 45.933  |
| Total Landfill Waste (tonnes)              | 0.920  | 2.000  | 1.260  | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 4.180   |
| Total Waste (tonnes)                       | 11.454   | 23.350 | 15.309 | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 50.113  |
|  |  |        |        |         |         |         |         |         |         |         |         |         |         |         |
| Total Waste (cubic metres)                 | 46   | 100    | 63     |         |         |         |         |         |         |         |         |         |         | 209.000 |
|  |  |        |        |         |         |         |         |         |         |         |         |         |         |         |
| Total Recycled Waste (percentage) By Month | 91.97%   | 91.43% | 91.77% | #DIV/0! |         |
| Total Recycled Waste (percentage) To Date  |  |        |        |         |         |         |         |         |         |         |         |         |         | 91.66%  |

### 3. CONTAMINATION WASTE MANAGEMENT PLAN

### **3.1 CONTAMINATION WASTER MANAGEMENT PLAN**

The project has a Remediation Action Plan (RAP) and Asbestos Management Plan (AMP) completed for the Earthworks required for the project. A Validation Plan and Environmental Management Plan are intended to be completed when required and all form part of the Construction Environmental Management Plan for the Project.

### **3.2 ASBESTOS REMOVAL AND UNEXPECTED FINDINGS**

All Asbestos removal will fall under the Project RAP & AMP. Any procedures, requirements and reporting will be

stipulated within these documents or the Validation Report completed for the remediation works. Below is an extract from

the AMP regarding procedures around unexpected finding of asbestos containing material out of asbestos removal working area:

In the event that asbestos containing material is identified outside of the asbestos removal work area, the following procedure is to be followed:

1. Upon discovery of a fragment(s) of asbestos cement or other asbestos containing material (or suspected asbestos containing material) all work in the immediate area is to cease.

2. The worker discovering the material is to inform his supervisor who in turn will advise the LAA.

3. The LAA will arrange for the area to be secured to prevent disturbance of the material. Where necessary, temporary fencing and warning signs are to be placed around the area.

4. The LAA will arrange, if necessary, for a sample of the material to be analysed to confirm the presence / absence of asbestos fibres.

5. Where the material is confirmed as containing asbestos, the asbestos removal contractor is to remove the material for disposal asbestos contaminated waste.

6. Where the material consists of a small number of fragments of asbestos cement sheet, asbestos PPE including disposable gloves is to be worn during the collection of the material. The fragment(s) will be picked up and the glove turned inside out to 'bag' the fragment(s). The disposable glove containing the fragment(s) of asbestos cement sheet

will then be placed directly into an asbestos waste bag for disposal.

7. The area is to be visually inspected by the LAA to verify that all of the asbestos containing material has been removed. A clearance report is to be compiled following the inspection.

8. Where a larger quantity of asbestos containing material is identified, the soil containing the asbestos containing material is to be excavated in accordance with the procedure detailed in Section 5 above. A visual inspection and validation sampling is to be undertaken and the details of this work are to be recorded in the validation report.



The above procedure is summarised in the following flowchart:



### 3.3 AIRBORNE ASBESTOS FIRBRE MONITORING

Below is an extract from the AMP regarding airborne asbestos fibre monitoring.

Monitoring for airborne asbestos fibres should be carried out at all times throughout the duration of the asbestos contaminated soil removal work by a licenced asbestos assessor (LAA) engaged by PF Civil.

Monitoring is to be carried out in accordance with the requirements of the National Occupational Health and Safety Commission (NOHSC) Code of Practice for the Safe Removal of Asbestos, particularly the 'Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres' 2nd edition [NOHSC:3003(2005)]. Analysis of the air monitoring filters is to be carried out by a NATA accredited laboratory.

Air monitors are to be placed in the decontamination / change area and on the temporary fencing or barricade surrounding the asbestos removal work area. Up to four monitors are to be placed on the perimeter of the asbestos removal work area.

The daily reports of the results of the air monitoring will be forwarded to PF Civil.

The NOHSC recommended maximum exposure level for airborne asbestos fibres, measured as a time weighted average over an 8 hour work shift, is 0.1 fibres per millilitre of air (0.1 fibres/ml).

The NOHSC Code of Practice for the Safe Removal of Asbestos details control levels for airborne asbestos fibre concentrations that are to be observed during the work. These control levels are as follows:

Airborne fibre Control Measure

concentration

(fibres/ml)

- <0.01 Continue work using existing asbestos dust control measures
- >0.01 Continue work and review asbestos dust control measures
- >0.02 Stop work, identify cause of dust emissions and revise dust control

measures.

(Refer to appendix 2)



4. APPENDIX 1 WASTE MANAGEMENT PLAN:



## CONFIDENTIAL Waste Management & Recycling Plan (NSW)

Bingo Industries offers a complete, comprehensive solution to the management and recycling of wastes to assure compliance with clients' waste management policy.

Bingo Recycling Centre's combine bin storage, waste collection, waste recycling and waste transfer to service the building and construction industry and domestic waste management needs in New South Wales. Wastes collected by Bingo Bins are taken directly to one of these facilities where approximately 90% of wastes are converted to recovered resources.

| Bingo Recycling Centre Alexandria              | EPL No. 4679  |
|--|---------------|
| Bingo Recycling Centre Artarmon                | EPL No. 20763 |
| Bingo Recycling Centre Auburn                  | EPL No. 10935 |
| Bingo Recycling Centre Eastern Creek (Genesis) | EPL No. 20121 |
| Bingo Recycling Centre Greenacre               | EPL No. 20847 |
| Bingo Recycling Centre Kembla Grange           | EPL No. 20601 |
| Bingo Recycling Centre Mortdale                | EPL No. 20622 |
| Bingo Recycling Centre Revesby                 | EPL No. 20607 |
| Bingo Recycling Centre Tomago                  | EPL No. 20585 |

As can be expected waste materials inwards vary considerably and are delivered to the Recycling Centres in tipping and non-tipping vehicles or in skip bins. Of the wastes inwards approximately 90% is recovered and recycled as materials outwards and the balance 10% to landfill. Waste materials inwards are processed to achieve the maximum recovery of resources and the minimum of un-recoverable material for offsite disposal.

| Typical Composition of Bingo's Wastes Inwards |                      |  |  |  |  |  |  |  |
|---|----------------------|--|--|--|--|--|--|--|
| Wastes Inwards                                | Percentage (approx.) |  |  |  |  |  |  |  |
| Heavy Recyclable Materials                    | 45%                  |  |  |  |  |  |  |  |
| Light Recyclable Materials                    | 35%                  |  |  |  |  |  |  |  |
| Metals  | 10%                  |  |  |  |  |  |  |  |
| Non-Recyclable Materials                      | 10%                  |  |  |  |  |  |  |  |
| Total   | 100%                 |  |  |  |  |  |  |  |

- - -

- -

### Heavy Recyclable Materials:

- Soil
- Dirt
- Sand
- Rubble
- Brick
- Concrete
- Tiles
- Stone
- Asphalt

### Light Recyclable Materials:

- Timber
- Green Waste
- Cardboard/ Paper
- Plastic
- Plasterboard



### Metals:

- Ferrous (steel, black iron)
- Non-Ferrous (copper, wire, aluminium, stainless)

At the Resource Recovery Facility a simple and effective waste processing procedure is applied. See Materials Flow Diagram (below). Wastes inwards unloaded onto the sorting area where the waste is raked with a hydraulic excavator to expose the contents and where recyclable materials are hand and machine sorted. The raking process separates the waste into four streams for further processing.

- Stream #1 Non-recyclable materials. These wastes pass to a holding area for off-site disposal.
- Stream #2 Metals and light recyclable materials are removed and stored for off-site recycling.
- Stream #3 Large sized heavy weight brick, concrete and rubble pieces. These wastes pass to the crushers where they are crushed and re-enforcing fabric removed. The output from the crushers passes to the screener where products of different size are separated and stored in stockpiles. Re-enforcing fabric is collected and stored in the general steel bin for off-site recycling.
- Stream #4 Small sized heavy weight soil, sand, brick, concrete and rubble. These wastes pass to the screener where the soil is separated form the brick, concrete and rubble. The brick, concrete and rubble then pass through Stream #3.

Stream #1 wastes are currently not recyclable and are removed from the land for offsite disposal. Stream #2 wastes, recovered metals and light recyclable materials are recycled off-site. Stream #3 and Stream #4 wastes are processed on site by crushing and screening to form saleable products such as soil, sand, and aggregates. These products are retained on site until sold.





In summary, Bingo Bins take all their mixed waste skip bins directly to EPA Licensed Recycling Centres. From there the waste is sorted and separated into the following material classes for processing and recycling.

| Type of Material   | Where Processed/<br>Recycled                                 | How Processed/ Recycled  |
|--|--|--|
| Heavy Recyclable Materials<br>(soil, dirt, sand, rubble,<br>concrete, brick, tiles, asphalt,<br>stone) | Bingo Recycling Centres                                      | Re-processed into recycled<br>products (such as recycled soil, fill<br>sand, aggregates, roadbase) by<br>crushing and screening. |
| Timber/ Green Waste  | Clean & Green Organics/<br>Genesis                           | Re-processed into woodchip and mulch by shredding.   |
| Metal/ Steel   | Sell & Parker/<br>CMI/<br>SIMS/<br>Sydney Copper Scraps      | Re-processed into new metal and steel products by shearing, baling and re-smeltering.  |
| Brick/ Concrete  | Boral/<br>Genesis  | Re-processed into recycled<br>products (such as fill sand,<br>aggregates, roadbase) by crushing<br>and screening.                |
| Cardboard/ Paper/ Plastic  | Polytrade Recycling/<br>J.J. Richards/<br>Orora              | Re-processed into new cardboard,<br>paper and plastic products by<br>breaking down the material into a<br>form for re-use.       |
| Plasterboard   | ReGyp  | Re-processed into gypsum<br>products by shredding and<br>screening.  |
| General Waste  | SUEZ Landfill/<br>Horsley Park Landfill/<br>Genesis Landfill | n/a  |



PO Box 7, Enfield NSW 2136 PO Box 5351, Clayton South VIC 3168 T: 1300 424 646 F: 02 9737 0351 enquiries@bingoindustries.com.au www.bingoindustries.com.au

**Bingo Recycling Centres** 76-82 Burrows Road, Alexandria NSW 2015 10 Mclachlan Ave, Artarmon NSW 2064 3-5 Duck Street, Auburn NSW 2144 Honeycomb Drive, Eastern Creek NSW 2766 35 Wentworth St, Greenacre NSW 2190 50 Wyllie Road, Kembla Grange NSW 2526 20 Hearne Street, Mortdale NSW 2223 37-51 Violet Street, Revesby NSW 2212 29 Laverick Avenue, Tomago NSW 2322 **Clean & Green Organics** 769 The Northern Rd, Bringelly NSW 2566 Sell & Parker • 45 Tattersall Road, Blacktown NSW 2148 CMI 38 York Road, Ingleburn NSW 2565 SIMS 43 Ashford Ave, Milperra NSW 2214 76 Christie St, St Marys NSW 2760 Sydney Copper Scraps 130 Adderley St, Auburn NSW 2760 Boral 6-10 Burrows Road South, St Peters NSW 2044 **Polytrade Recycling** 32 South St, Rydalmere NSW 2116 40 Madeline St, South Strathfield NSW 2136 J.J. Richards 12 Heald Rd, Ingleburn NSW 1890 8 Kommer Pl, St Marys NSW 2760 Orora 1891 Botany Rd, Matraville NSW 2036 ReGyp 330 Captain Cook Drive, Kurnell NSW 2231 SUEZ Landfill • Elizabeth Drive, Kemps Creek NSW 2178 **Horsley Park Landfill** • Wallgrove Road, Horsley Park NSW 2164 **Genesis Landfill** Honeycomb Drive, Eastern Creek NSW 2766



5. APPENDIX 2 RECYCLING RESULTS:

|             |                                       | 2019  |         |       |       |         |       |       |       |       |       |       |       |       |       |      |       |       |      |       |       |      |       |        |      |       |        |      |       |         |      |       |        |       |       |        |        |
|-------------|---------------------------------------|-------|---------|-------|-------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|------|-------|-------|------|-------|--------|------|-------|--------|------|-------|---------|------|-------|--------|-------|-------|--------|--------|
|             |                                       |       | January |       |       | Februar | y     |       | March |       |       | April |       |       | May   |      |       | June  |      |       | July  |      |       | August |      | S     | eptemb | er   |       | Octobe  | r    | 1     | Novemb | er    | D     | ecembe | er     |
| Job Number  | Site Name                             | Т     | R       | L     | T2    | R3      | L4    | T5    | R6    | L7    | Т8    | R9    | L10   | T11   | R12   | L13  | T14   | R15   | L16  | T17   | R18   | L19  | T20   | R21    | L22  | T23   | R24    | L25  | T26   | R27     | L28  | T29   | R30    | L31   | T32   | R33    | L34    |
| 1620        | Canopy Apartments Putney              |       |         |       |       |         |       |       |       |       |       |       |       | 1.57  | 1.52  | 0.05 | 1.47  | 1.47  |      | 7.16  | 7.01  | 0.15 | 0.62  | 0.62   |      |       |        |      |       |         |      |       |        |       |       |        |        |
| 1627        | Chatswood Place                       | 6.35  | 6.01    | 0.34  | 5.06  | 4.84    | 0.22  | 4.16  | 4.01  | 0.15  |       |       |       | 0.86  | 0.84  | 0.02 |       |       |      |       |       |      |       |        |      |       |        |      |       |         |      | 1.8   | 3 1.8  |       |       |        |        |
| 1632        | 342 King St, Mascot                   |       |         |       |       |         |       |       |       |       |       |       |       |       |       |      |       |       |      |       |       |      | 0.95  | 0.87   | 0.8  |       |        |      |       |         |      |       |        |       |       |        |        |
| 1704        | John Morony                           |       |         |       | 1.33  | 1.27    | 0.06  |       |       |       |       |       |       |       |       |      |       |       |      |       |       |      |       |        |      |       |        |      |       |         |      |       |        |       |       |        |        |
| 1708        | Haven Development                     | 6.77  | 6.6     | 0.17  | 10.75 | 10.55   | 0.2   | 5.21  | 4.98  | 0.23  |       |       |       | 3.05  | 2.88  | 0.17 |       |       |      |       |       |      |       |        |      |       |        |      | 2.23  | 2.19    | 0.04 |       |        |       |       |        |        |
| 1709        | Cardinal Freeman Stage 3              | 57.89 | 55.87   | 2.02  | 115.6 | 113.9   | 1.64  | 95.77 | 93.41 | 2.36  | 93.08 | 91.73 | 1.35  | 69.32 | 68.33 | 0.99 | 31.63 | 31.43 | 0.2  | 4.12  | 3.95  | 0.17 |       |        |      |       |        |      |       |         |      |       |        |       |       |        |        |
| 1720        | Knox Grammar                          | 101.2 | 100.2   | 0.94  | 100.9 | 99.12   | 1.73  | 123.4 | 121   | 2.02  | 38.47 | 37.45 | 1.02  | 1.29  | 1.25  | 0.04 |       |       |      |       |       |      |       |        |      |       |        |      |       |         |      |       |        |       |       |        |        |
| 1728        | BMW                                   | 264.9 | 261.2   | 3.46  | 194   | 191.3   | 2.74  | 142.4 | 139.4 | 3.03  | 106.1 | 103.6 | 2.45  | 49.93 | 49.14 | 0.79 | 0.71  | 0.71  |      |       |       |      |       |        |      |       |        |      |       |         |      |       |        |       |       |        |        |
| 1735        | Boomerang                             | 157.4 | 155     | 2.43  | 251.4 | 247.4   | 4.25  | 207.8 | 201.8 | 6.07  | 187.1 | 184.4 | 2.7   | 289.7 | 284.9 | 4.74 | 208.2 | 206.2 | 2    | 285.7 | 282.4 | 3.34 | 265.4 | 263    | 2.38 | 316.8 | 314.6  | 2.18 | 241   | 238.3   | 2.75 | 72.29 | 69.68  | 2.61  | 22.1  | 20.32  | . 1.78 |
| 1737        | Hammondcare Darlinghurst              | 35.98 | 35.31   | 0.67  | 31.39 | 31.05   | 0.34  | 33.75 | 33.41 | 0.34  | 33.6  | 32.92 | 0.68  | 41.95 | 41.07 | 0.88 | 55.46 | 54.78 | 0.68 | 88.89 | 87.71 | 1.18 | 119.1 | 118.4  | 0.76 | 105   | 104.3  | 0.68 | 67.46 | 67.21   | 0.25 | 128.9 | 127.9  | 0.95  | 41.43 | 41.36  | , 0.08 |
| 1738        | Hammondcare Cardiff                   |       |         |       |       |         |       |       |       |       |       |       |       |       |       |      |       |       |      |       |       |      |       |        |      |       |        |      |       |         |      |       |        |       |       |        |        |
| 1802        | Taronga Zoo Wildlife Retreat          | 94.23 | 91.87   | 2.36  | 107.2 | 104.8   | 2.37  | 141.6 | 137.9 | 3.71  |       |       |       |       |       |      |       |       |      |       |       |      |       |        |      |       |        |      | 1.21  | 1.19    | 0.02 |       |        |       |       |        |        |
| 1804        | Ingleburn 41-47 Stennett Rd           |       |         |       | 41.08 | 40.64   | 0.44  | 11.2  | 10.95 | 0.25  | 10.46 | 10.16 | 0.3   |       |       |      |       |       |      |       |       |      |       |        |      |       |        |      |       |         |      |       |        |       |       |        |        |
| 1805        | Homebush West Public School           | 67.55 | 66.26   | 1.29  | 33.14 | 32.44   | 0.7   | 1.91  | 1.84  | 0.07  |       |       |       |       |       |      |       |       |      |       |       |      |       |        |      |       |        |      |       |         |      |       |        |       |       |        |        |
| 1806        | Opal Aged Care Facility Winston Hills | 86.16 | 83.38   | 2.78  | 96.86 | 94.62   | 2.24  | 109.2 | 106.7 | 2.5   | 53.98 | 52.71 | 1.27  | 2.18  | 2.1   | 0.08 |       |       |      |       |       |      | 6.45  | 6.39   | 0.06 |       |        |      |       |         |      |       |        |       |       |        |        |
| 1810        | SACL IBIS                             | 72.99 | 71.97   | 1.02  | 75.24 | 74.23   | 1.01  | 53.56 | 53.22 | 0.34  | 40.93 | 40.26 | 0.67  | 31.41 | 31.07 | 0.34 | 5.14  | 5.14  |      |       |       |      |       |        |      |       |        |      |       |         |      |       |        |       |       |        |        |
| 1812        | Chullora Australia Post               | 17.31 | 16.3    | 1.01  |       |         |       | 8.6   | 8.27  | 0.33  | 9.74  | 9.4   | 0.34  | 21.43 | 21.3  | 0.13 |       |       |      |       |       |      |       |        |      |       |        |      |       |         |      |       |        |       |       |        |        |
| 1816 (1825) | Uniting Mayflower                     | 48.65 | 47.97   | 0.68  | 40.6  | 39.59   | 1.01  | 68.8  | 67.11 | 1.69  | 46.72 | 45.37 | 1.35  | 80.74 | 78.71 | 2.03 | 76.66 | 75.99 | 0.67 | 111.5 | 110   | 1.52 | 119.1 | 118.4  | 0.68 | 143   | 142.3  | 0.68 | 62.3  | 61.29   | 1.01 | 113.1 | 111.9  | 1.18  | 58.61 | 57.6   | 1.01   |
| 1818        | GPT LOT21 Eastern Creek               | 67.57 | 65.79   | 1.78  | 19.88 | 19.59   | 0.29  |       |       |       |       |       |       | 2.2   | 2.1   | 0.1  |       |       |      |       |       |      |       |        |      |       |        |      |       |         |      |       |        |       |       |        |        |
| 1819        | King St                               |       |         |       |       |         |       |       |       |       |       |       |       | 10.37 | 10.04 | 0.33 | 12.37 | 12.2  | 0.17 | 36.16 | 35.82 | 0.34 | 45.43 | 45.09  | 0.34 | 61.73 | 61.39  | 0.34 | 77.8  | 3 76.93 | 0.87 | 104   | 102.9  | 1.16  | 61.2  | 60.76  | 0.44   |
| 1820        | Irvine Place, Bella Vista             | 2.36  | 2.19    | 0.17  |       |         |       | 8.27  | 7.93  | 0.34  |       |       |       | 6.44  | 6.1   | 0.34 |       |       |      |       |       |      |       |        |      |       |        |      |       |         |      |       |        |       |       |        |        |
| 1821        | Norwest Data Centre Modernisation     |       |         |       |       |         |       |       |       |       |       |       |       |       |       |      |       |       |      |       |       |      |       |        |      |       |        |      |       |         |      |       |        |       |       |        |        |
| 1823        | SYD051 Stage 5 Eastern Creek          | 20.08 | 19.74   | 0.34  | 25.18 | 24.5    | 0.68  | 31.18 | 30.5  | 0.68  | 15.71 | 15.04 | 0.67  | 34.01 | 33.33 | 0.68 |       |       |      |       |       |      |       |        |      |       |        |      |       |         |      |       |        |       |       |        |        |
| 1824        | Lindfield                             | 429.5 | 422     | 7.43  | 122.2 | 121.1   | 1.08  | 93.01 | 89.54 | 3.47  |       |       |       | 28.08 | 27.11 | 0.97 |       |       |      | 27.34 | 27.15 | 0.19 |       |        |      |       |        |      |       |         |      |       |        |       |       |        |        |
| 1833        | Bluett Dr - Smeaton Grange            |       |         |       | 6.42  | 6.26    | 0.16  | 33.01 | 31.87 | 1.14  | 26.98 | 25.97 | 1.01  | 23.66 | 23.16 | 0.5  |       |       |      |       |       |      | 25.87 | 24.47  | 0.4  |       |        |      |       |         |      |       |        |       |       |        |        |
| 1834        | NorthConnex                           | 14.77 | 14.09   | 0.68  | 19.83 | 19.5    | 0.33  | 40.42 | 39.75 | 0.67  | 37.62 | 36.78 | 0.84  | 45.56 | 44.55 | 1.01 | 67.16 | 66.48 | 0.68 |       |       |      | 19.74 | 19.57  | 0.17 |       |        |      |       |         |      |       |        |       |       |        |        |
| 1902/1918   | Picton High School                    | 133.8 | 128.4   | 5.23  | 36.48 | 35.54   | 0.94  | 61.9  | 61.26 | 0.64  | 46.08 | 45.51 | 0.57  | 41.2  | 40.56 | 0.64 | 13.83 | 13.49 | 0.34 | 17.88 | 17.71 | 0.17 | 6.41  | 6.41   |      | 3.18  | 2.84   | 0.34 | 25.24 | 25.07   | 0.17 | 26.34 | 26.34  |       | 63.87 | 62.67  | 1.2    |
| 1903        | Polair Bankstown                      |       |         |       |       |         |       |       |       |       |       |       |       |       |       |      |       |       |      |       |       |      |       |        |      | 19.38 | 18.93  | 0.44 | 15.23 | 15.06   | 0.17 | 2.21  | 2.21   |       | 9.81  | 9.17   | 0.65   |
| 1904        | Willoughby Girls High School          | 125.4 | 123.5   | 1.9   | 56.61 | 55.93   | 0.68  | 35.49 | 34.81 | 0.68  | 38.79 | 37.98 | 0.81  |       |       |      | 81.41 | 81.07 | 0.34 | 65.42 | 65.08 | 0.34 |       |        |      |       |        |      | 86.76 | 85.62   | 1.13 |       |        |       |       |        |        |
| 1906        | Greenwich Public School               | 4.49  | 4.32    | 0.17  | 10.69 | 10.52   | 0.17  | 58.58 | 57.42 | 1.16  | 41.47 | 41.13 | 0.34  | 55.45 | 54.77 | 0.68 | 21.24 | 21.07 | 0.17 | 61.37 | 61.04 | 0.33 |       |        |      | 75.98 | 75.47  | 0.51 | 72.19 | 71.01   | 1.18 | 57.18 | 56.61  | 0.58  | 27.13 | 27.13  | ,      |
| 1908        | Pendle Hill High School               | 3.67  | 3.56    | 0.11  | 24.88 | 24.77   | 0.11  | 53.48 | 53.1  | 0.38  | 42.32 | 41.87 | 0.45  | 25.71 | 25.31 | 0.4  | 18.18 | 17.95 | 0.23 | 35.53 | 35.23 | 0.3  | 84.82 | 84.29  | 0.53 | 48.31 | 47.97  | 0.34 | 34.43 | 33.64   | 0.79 | 27.91 | 27.24  | 0.68  | 34    | 33.32  | 0.68   |
| 1909        | Yagoona Public School                 | 3.24  | 3.08    | 0.16  | 10.56 | 10.22   | 0.34  | 9.26  | 8.92  | 0.34  |       |       |       | 16.43 | 16.1  | 0.33 | 30.22 | 30.05 | 0.17 |       |       |      |       |        |      |       |        |      | 68.4  | 67.56   | 0.84 |       |        |       |       |        |        |
| 1910        | MPL Aldi                              |       |         |       |       |         |       |       |       |       |       |       |       |       |       |      | 6.08  | 5.91  | 0.17 |       |       |      |       |        |      |       |        |      |       |         |      |       |        |       |       |        |        |
| 1913        | Eastern Creek                         |       |         |       |       |         |       |       |       |       |       |       |       |       |       |      | 25.03 | 24.52 | 0.51 |       |       |      |       |        |      |       |        |      |       |         |      |       |        |       |       |        |        |
| 1914        | Smeaton Grange                        |       |         |       |       |         |       |       |       |       |       |       |       |       |       |      | 9.68  | 9.68  |      | 19.26 | 19.03 | 0.23 |       |        |      | 9.15  | 8.85   | 0.3  |       |         |      |       |        |       |       |        |        |
| 1915        | Chullora Hard Stand                   |       |         |       |       |         |       |       |       |       | 22.07 | 21.86 | 0.21  | 19.41 | 19.26 | 0.15 | 9.52  | 9.18  | 0.34 | 15.63 | 15.49 | 0.14 | 13.35 | 13.11  | 0.24 | 1.74  | 1.74   |      | 8.06  | 5 7.98  | 0.08 |       |        |       |       |        |        |
| 1916        | Dee Why                               |       |         |       |       |         |       |       |       |       | 3.28  | 3.16  | 0.12  | 8.62  | 8.36  | 0.26 | 37.74 | 37.4  | 0.34 | 28.43 | 27.86 | 0.57 | 15.57 | 15.41  | 0.16 | 23.17 | 23.02  | 0.15 | 47.99 | 46.93   | 1.06 | 60.67 | 59.39  | 1.28  | 76.64 | 75.2   | 1.43   |
| 1917        | Chippendale                           | 1     |         |       |       |         |       |       |       |       |       |       |       |       |       |      |       |       |      |       |       |      | 4.86  | 4.69   | 0.17 |       |        |      |       |         |      |       |        |       |       |        |        |
| 1920        | 50 Norwest Blvd                       |       |         |       |       |         |       |       |       |       |       |       |       |       |       |      |       |       |      |       |       |      | 112.4 | 112    | 0.34 | 72.73 | 72.05  | 0.68 | 39.15 | 38.81   | 0.34 | 66.2  | 64.95  | 1.25  | 57.39 | 56.54  | 0.84   |
| 1922        | Bowden Brae, Normanhurst              |       |         |       |       |         |       |       |       |       |       |       |       |       |       |      |       |       |      |       |       |      |       |        |      |       |        |      | 1     |         |      | 10.31 | 10.14  | 0.17  | 12.1  | 11.37  | 0.73   |
| 1923        | Gowrie Village                        |       |         |       |       |         |       |       |       |       |       |       |       |       |       |      |       |       |      |       |       |      |       |        |      |       |        |      | 1     |         |      | 0.35  | 0.35   |       |       |        |        |
| 2004        | Stockland Yennora Resessed docks      | 1     |         |       |       |         |       |       |       |       |       |       |       |       |       |      |       |       |      |       |       |      |       |        |      |       | 1      |      | 1     | 1       | 1    | 18.59 | 18.43  | 0.17  |       |        |        |
| L           |                                       | 1822  |         |       | 1437  |         |       | 1432  |       |       | 894.5 |       |       | 910.5 |       |      | 711.7 |       |      | 804.4 |       |      | 840   |        |      | 880.2 |        |      | 849.5 | 5       |      | 689.8 | 3      |       | 464.3 |        |        |
|             |                                       |       | 1785    |       |       | 1414    |       |       | 1399  |       |       | 877.3 |       |       | 892.4 |      |       | 703.2 |      |       | 788.4 |      |       | 832.1  |      |       | 873.6  |      |       | 838.8   |      |       | 679.8  |       |       | 455.4  |        |
|             |                                       |       |         | 37.14 |       |         | 23.73 |       |       | 32.59 |       |       | 17.15 |       |       | 16.6 |       |       | 7.01 |       |       | 8.82 |       |        | 7.03 |       |        | 6.64 | ļ     |         | 10.7 |       |        | 10.03 | 1     |        | 8.84   |

6. APPENDIX 3 ASBESTOS MANAGEMENT PLAN:



# Asbestos Management Plan for the Removal of Asbestos Contaminated Fill Soil

Kyeemagh Public School Jacobson Avenue & Beehag Street, Kyeemagh NSW



Prepared for: **PF Civil** PO Box 4088 Winmalee NSW 2777

Prepared by: **P Clifton & Associates Pty Ltd** ABN: 69 041 751 671 PO Box 457, Turramurra NSW 2074 Mob: 0437 251 358

Ref: PCA6721-2020\_AMP01\_28Jul20



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## DISTRIBUTION

Asbestos Management Plan for the Removal of Asbestos Contaminated Fill Soil Kyeemagh Public School Jacobson Avenue & Beehag Street, Kyeemagh NSW

28 July 2020

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### **Copies Recipient**

**PF Civil** PO Box 4088 Winmalee NSW 2777

Att: Mr Brendan Roots

This document was prepared for the sole use of PF Civil and the regulatory agencies that are directly involved in this project, the only intended beneficiaries of our work. No other party should rely on the information contained herein without the prior written consent of P. Clifton & Associates Pty Ltd and PF Civil.

Bу

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# 1 INTRODUCTION

This Asbestos Removal Management Plan (AMP) provides details of the scope of work, work procedure and occupational health and safety precautions to be observed for the removal of asbestos contaminated fill soil that is present in the eastern area of the Kyeemagh Public School located at Jacobson Avenue and Beehag Street, Kyeemagh NSW.

A recent detailed site investigation has identified fill soil containing asbestos cement sheet materials and debris to be present in the eastern area of the site near the boundary along Tancred Avenue.

The location of this fill soil is shown on the site plan in Appendix 1 at the rear of this report.

In order to safely remove the fill soil containing asbestos cement sheet debris and other building debris from the eastern area within the site, P. Clifton & Associates (PCA) have compiled this AMP which contains the scope of work, technical specification and information regarding the safe work procedures and regulatory requirements to be observed during the excavation and removal from site of the fill soil containing pieces and fragments of asbestos containing material.

## 2 RESPONSIBILITIES

## 2.1 Principal

Taylor Constructions as the head contractor on the site is the principal overseeing the removal and disposal of the asbestos contaminated fill soils.

The Principal will liaise with the client and other stakeholders as necessary for the removal of the asbestos contaminated fill soils that have been identified within the site.

## 2.2 Licenced Asbestos Assessor (LAA)

An experienced licenced asbestos assessor (LAA) will be engaged by the principal or the civil contractor to oversee the asbestos removal work and ensure that all OH&S requirements are fully complied with.

The LAA will be responsible for the following activities:

- Verifying that all persons working on the site (fill soil removal and disposal work) have current training certificates for the work that will be carrying out.
- Ensure that the safe work method statement (SWMS) for the asbestos removal contractor is completed and signed off.
- Undertake daily airborne asbestos fibre monitoring, as required.
- Undertake visual clearance inspections at the completion of asbestos removal work in each area, collect validation soil samples and compile validation report.



• Manage unexpected finds of asbestos containing materials identified on the site but outside of the asbestos removal work areas.

## 2.3 Asbestos Removal Contractor

The remediation contractor will be an experienced non- friable Class B licenced asbestos removal contractor (minimum licence requirement), who will undertake the asbestos removal and decontamination work at the site. The remediation contractor will be responsible for the following activities:

- The asbestos removal contractor's removal supervisor must oversee the work and must have completed an approved non-friable asbestos removal supervisor's course recognised by SafeWork NSW and Safe Work Australia.
- The asbestos removal contractor's personnel must have completed an approved nonfriable asbestos removal workers course recognised by NSW WorkCover and Safe Work Australia.
- Undertaking removal of all asbestos contaminated soil and disposing of this contaminated waste at a suitably licenced landfill facility.
- Compliance with all safety requirements as detailed in this AMP and their site specific SWMS.

## 3 REGULATORY REQUIREMENTS

## 3.1 Statutory Regulations and Code of Practice

The removal and disposal of asbestos containing construction materials in NSW is overseen by various authorities including SafeWork NSW (SafeWork), the NSW Environment Protection Authority (NSW EPA), local government (council) by administering various legislation, regulations and codes of practice. Statutory documents that are applicable to the work include (but are not limited to) the following:

- NSW Work Health & Safety Act 2011.
- NSW Work Health & Safety Regulation 2017.
- How To Safely Remove Asbestos Code of Practice issued by Safe Work Australia, October 2018.
- How To Manage and Control Asbestos in the Workplace issued by Safe Work Australia October 2018.
- NSW Protection of the Environment Operations (General) Regulation 2009: Reg 92.
- NSW Protection of the Environment Operations (Waste) Regulation 2014: 'Sections 77 -81.
- National Environment Protection (Assessment of Site Contamination) Measure. Schedule B (1) - Guideline on Investigation Levels for Soil and Groundwater (May 2013).

• enHEALTH Management of Asbestos in the Non-Occupational Environment (2005). PCA6721-2020\_AMP01\_28Jul20



NSW Environment Protection Authority (EPA) Waste Classification Guidelines – Part 1: Classification of waste (November 2014).

The proposed asbestos removal work at the site involves the excavation and stockpiling of the identified asbestos contaminated fill soil following which this soil is to be disposed of at a suitably licenced landfill facility.

#### 3.2 **Risk Assessment and Asbestos Classification**

Health risk from asbestos containing materials only occurs from airborne asbestos fibres. Whilst asbestos containing materials remain undisturbed and there are no fibres being released from these materials then there is no actual risk posed. Materials which contain loose fibres have a high potential to generate airborne when disturbed.

In accordance with the NSW Work Health and Safety Regulation 2017, asbestos containing materials are classified as either 'friable' or 'non-friable' materials.

'Friable' asbestos containing materials are any material that contains asbestos and is in the form of a powder or can be crumbled, pulverised or reduced to powder by hand pressure when dry.

'Non-friable' asbestos containing material means any material (other than friable asbestos material) that contains asbestos. Typically, asbestos cement materials are classified as 'nonfriable' asbestos containing materials. Surface fill soils within the eastern area in the site, in which fragments of asbestos cement sheet are present and which is not degraded from their original form is also classified as 'non-friable' asbestos containing material.

The removal of fragments of non-friable asbestos containing material and soil containing pieces and fragments of non-friable asbestos containing material from the nominated areas at the site is only to be carried out by a contractor holding a Class A licence for friable asbestos removal work or a contractor holding a Class B licence for non-friable asbestos removal work.

#### 3.3 Asbestos Removal Permit and Licence for Non - Friable Asbestos Removal

The removal of the asbestos cement sheet materials, debris and soil containing fragments of nonfriable asbestos containing material from the nominated areas at the site may only be carried out by an experienced asbestos removal contractor holding a contractor holding a Class A licence for friable asbestos removal work or a contractor holding a Class B licence for non-friable asbestos removal work. Prior to the commencement of the proposed work a notification of non-friable asbestos removal work is to be submitted from SafeWork NSW.

The work on site is not to commence until the notification for non-friable asbestos removal is approved by SafeWork NSW. There is usually a five day wait between the submission of the application for non-friable asbestos removal and the allowable commencement of the work. PCA6721-2020\_AMP01\_28Jul20 4



A copy of the asbestos removal notification and asbestos removal licence is to be held on site at all times during the work.

## 3.4 Working Area

The Kyeemagh Public School is an operating school site and the asbestos removal contractor must ensure that all work is contained within the nominated asbestos removal areas at all times. Excavation, stockpiling and loading out of the asbestos contaminated fill soil is to only be undertaken during the nominated work hours. The storage of materials and equipment is available on site. All materials and equipment that are left on site should be secured to prevent access by members of the public and the responsibility for the security of these materials and the working areas is the sole responsibility of the contractor.

During the asbestos removal work at the site, the construction area in which asbestos removal work is on-going is to be secured using temporary fencing or other secure barricade to prevent access by unauthorised persons.

Where the work is not completed and disturbed asbestos containing and contaminated material remains in the work area, this area is to be secured to prevent unauthorised access. All exposed asbestos contaminated fill soil remaining at the end of each work day is to be covered with geofabric or plastic sheeting to prevent dust generation.

## 4 SCOPE OF WORK

The work that is to be completed at the site includes the excavation, stockpiling and loading out of asbestos contaminated soil located from the eastern area within the site.

In order to remove the in-situ asbestos contaminated fill soil from the nominated area within the site, the following scope of work is to be completed:

- 1. Establish fencing or barricades around the asbestos contaminated fill soil area. Asbestos warning signs are to be placed on the fence or barricades and are to remain in place until the asbestos contaminated soil removal work in the area is complete.
- 2. A decontamination and change area is to be established at the entry to the asbestos removal work area at the site.
- 3. Water is to be available at the site for use to suppress dust during the soil excavation and loading out.
- 4. The fill soil in the eastern area within the site is to be excavated and stockpiled following which the soil is to be loaded into covered leakproof bins and / or trucks (or plastic lined bins / trucks) for transport for a landfill facility licenced to accept the waste (based on the waste classification report).



- 5. The fill soil containing asbestos cement sheet debris extends to an approximate depth of 400 mm. At the completion of the excavation and loading out of the in-situ asbestos contaminated fill soil, the remaining soil to a depth of approximately 50 mm is to be ripped for visual inspection to confirm that all of the asbestos contaminated fill soil has been removed. Where further asbestos cement sheet debris in fill is found to be present, the soil containing these fragments is to be excavated and loaded out for off-site disposal as asbestos contaminated waste. The excavation and stockpile footprint areas are to be scrapped to ensure that all fill soil that was excavated and stockpiled has been fully removed.
- 6. A final visual asbestos material clearance inspection is to be carried out across the excavation and stockpile areas at the completion of the removal of all of the asbestos contaminated fill soil. The visual clearance inspection is to be carried out in accordance with the requirements of Section 3.10 of the How to Safely Remove Asbestos Code of Practice issued by Safe Work Australia.
- 7. In conjunction with the final visual inspection of the asbestos removal work area, validation soil sampling is to be carried out by the environmental consultant. Soil sampling is to be carried out in accordance with the methodology detailed in the "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 issued in 2013 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia May 2009".
- 8. A clearance / validation report detailing the scope of the remediation work, findings of the visual inspections and results of the validation sample analysis is to be compiled for asbestos contaminated work area(s) within the site. The clearance / validation report is to contain copies of all waste disposal documentation, airborne asbestos fibre monitoring reports and soil sample analysis reports.

## 5

## ASBESTOS REMOVAL PROCEDURE

The asbestos work procedure detailed below is designed to minimise and control the potential exposure of persons undertaking the work and also to prevent the exposure of persons in adjacent areas to airborne asbestos fibres.

A safe work method statement for the asbestos removal work is to be compiled by the remediation contractor prior to undertaking the work.

The following procedure details the requirements for the removal of the asbestos contaminated fill soil containing fragments of asbestos cement sheet (non-friable asbestos containing material).

- 1. A barricade with asbestos removal warning signs is to be placed around the asbestos removal work area at the site.
- 2. A decontamination and change area is to be located at the entry to the non-friable asbestos removal work area.


- 3. All persons entering the asbestos removal work area are to wear disposable coveralls and Class P2 or P3 respiratory equipment. Prior to leaving the work area, persons are to remove their PPE in the decontamination area.
- 4. The transport of the asbestos contaminated waste is to be undertaken in covered leak proof vehicles and is to be disposed of at a landfill site that can lawfully receive this waste as detailed in the 'Special Requirements Relating to Asbestos Waste' in the Protection of the Environment Operations (Waste) Regulation 2005. Truck access and egress to the site is to be carried out as per the traffic management plan prepared for truck movements to the site.
- 5. A machine / truck parking area is to be located adjacent to the decontamination and change area. Operators are only to enter / exit the machine / trucks in this area. Wheels are to be washed to remove asbestos contaminated soil prior to the machines / trucks entering this area.
- 6. At the completion of the asbestos removal work each day, the remaining exposed in -situ soil and stockpiled soil is to be covered with geo-fabric or plastic sheeting.
- 7. A final visual inspection is to be carried out across the asbestos contaminated soil removal area at the completion of the removal of asbestos contaminated fill soil. In conjunction with the final visual inspection, validation soil sampling is to be carried out by the environmental consultant. Validation soil samples are to be collected with sampling to be undertaken in accordance with the sample design guidelines issued by the NSW EPA for soil sampling as part of site assessment investigations.
- 8. Upon receipt of the results of the soil sample analysis showing the sampled soil to be free of asbestos fibre contamination (below the site acceptance criteria of 0.01% weight / weight for asbestos containing material (ACM) and each of the soil samples was found to be below the acceptance level of 0.001% weight / weight for fibrous asbestos (FA) and asbestos fines (AF), the barricades surrounding the asbestos removal areas may be removed and the area opened for unrestricted access.

# REQUIREMENTS FOR ASBESTOS REMOVAL WORK

The asbestos removal work at the site is to be carried out in accordance with the requirements for the removal of non-friable asbestos containing material as detailed in the NSW Work Health and Safety Regulation 2017 and the Safe Work Australia How to Safely Remove Asbestos Code of Practice issued in October 2018.

A summary of the main requirements to be implemented for the work is as follows:

The asbestos removal work areas shall be contained within the nominated area at the site.

6



Warning signs are to be placed at the entry to the asbestos removal work area and should read "Asbestos Work Area, No Unauthorised Entry". These signs are to comply with Australian Standard 1319-1983: Safety signs for the occupational environment.

A change and decontamination area (designated area for changing into and out of asbestos PPE, no wet shower facilities required) is to be located at the entry to the 'non-friable' asbestos removal work area. All persons entering these asbestos removal work areas are to change into asbestos protective equipment in the change area and undergo decontamination prior to leaving the work area. All asbestos PPE is to be removed in the decontamination area when exiting the work area(s).

### 6.1 Asbestos Removal Training and Health Assessment

The asbestos removal contractor shall provide instruction to all persons involved in the asbestos removal work that may be exposed to asbestos in the course of the work regarding the danger to health and the statutory requirements that are required to provide safe working conditions.

The asbestos contractor's staff, including all machine operators, involved with the removal of the asbestos containing materials must also be formally trained in safe non-friable asbestos removal working procedures and in the wearing and maintenance of protective clothing and equipment. The supervisor on the site is to have completed formal training in the supervision of non-friable asbestos removal. Evidence of this training is to be held on site.

All persons involved in the licenced asbestos removal work are to have completed current health assessments in accordance with Clauses 435 and 436 of the NSW WHS Regulation 2017.

### 6.2 Personal Protective Equipment

All persons entering the work areas (to undertake asbestos removal work) are to wear disposable coveralls, disposable or re-usable Class P2 or P3 respirator and washable boots.

Operators of machines and trucks involved in the work are not required to wear asbestos PPE provided that the cabins of their machine / truck are air conditioned and that the air conditioning remains in operation at all times.

A machinery parking area is to be located adjacent to the decontamination and change area. Operators are only to enter / exit the machines in this area. Operators not wearing asbestos PPE are not permitted to exit the machines within the asbestos work area.

Re-usable respirators are to be issued to each person entering the work area and are to be cleaned prior to leaving the asbestos work area.



Persons entering the work areas for supervision or inspection of the work are to wear disposable coveralls, Class P2 half face respirator and washable boots. Disposable Class P2 half face dust masks may be used.

All persons entering the work area are to be instructed on the correct fit and wearing of the respirator. No person with a beard shall be permitted to enter an asbestos removal work area. Disposable items of PPE are not to be taken outside of the asbestos removal work area. When leaving the work area, disposable items of PPE are to be placed into asbestos waste bags for disposal as asbestos contaminated waste.

Reusable items such as boots are to be thoroughly cleaned in the decontamination unit prior to leaving the work area.

The laundering of approved non-disposable protective clothing shall be carried out in accordance with the procedures approved by SafeWork NSW. Waste water from washing of contaminated clothing is to be filtered prior to disposal to the sewer and clothes dryers used for drying clothes or towels are to be filtered through a HEPA filter.

### 6.3 Decontamination Facilities

For the removal of non-friable asbestos containing materials, a designated decontamination area is to be established at the entry to the asbestos removal area. All persons entering the asbestos removal area are to change into / out of their PPE in the designated decontamination area. Wet shower facilities are not a mandatory requirement for non-friable asbestos removal, however they may be provided by the contractor if they wish to do so.

When leaving the work area, the following decontamination procedure is to be followed:

- Remove any visible asbestos dust/residue from protective clothing using an asbestos vacuum cleaner or wiping down with damp cloths. Warning: do not reuse or resoak damp cloths.
- Carefully remove disposable protective clothing and place into bags, (RPE must still be worn).
- Place cloths into asbestos waste disposal plastic bag (200 µm thick).
- Take disposable coveralls off and place into asbestos waste disposal bag (RPE must still be worn).
- Use damp cloths to wipe down footwear and place cloths into asbestos waste disposal bag.
- Seal all asbestos waste plastic bags with duct tape and place each into a second plastic bag.
- Seal this second plastic bag and label/mark as 'Asbestos Waste'.



- Use damp rags to wipe external surfaces of the asbestos waste disposal bags to remove any dust before it is removed from the asbestos removal work area.
- Remove PPE and double bag, seal with duct tape and mark as 'Asbestos Waste'.
- Remove non-disposable PPE and place in container labelled as containing asbestos.
- Remove disposable RPE and double bag, seal with duct tape and mark as 'Asbestos Waste'.
- Reusable RPE is to be wiped with damp cloth and bag for reuse. Place the damp cloth into a disposable asbestos waste bag.
- Ensure the outside of the bags are decontaminated by using a damp cloth.
- Place the damp cloth into disposable asbestos waste bags.
- Dispose of asbestos waste at the appropriate waste facility.

### 6.4 Disposal of Asbestos Contaminated Waste

The asbestos contaminated soil is to be loaded into skip bins or trucks with loading to be undertaken as close as possible to the stockpile excavation area to minimise the likelihood of asbestos contamination occurring in adjacent areas where no asbestos contamination has been identified.

As far as practically possible vehicles are not to drive on soil on / in fill soil areas in which there is asbestos cement sheet debris. Where this is unavoidable, a wheel wash is to be located at the entry / exit to the asbestos removal work area. Wheels are to be washed to remove asbestos contaminated soil prior to the trucks exiting the asbestos removal work area. Water from the wheel wash is to be directed into the asbestos removal work area. Asbestos contamination within this water is to be captured in the soil which is to be excavated for disposal as asbestos contaminated waste.

The asbestos waste is to be transported to the landfill site in covered leak-proof vehicles with the soil to be wetted sufficient to prevent water leakage and dust emissions during transport to the landfill site.

Documentary evidence of the correct disposal of the waste shall be provided. This documentation will include name of authorised tip, weigh bridge docket and registration number of vehicle for every disposal.

All small items of asbestos contaminated waste from the work such as used disposable PPE is to be double bagged in 0.2 mm asbestos waste bags for disposal at a landfill facility licenced by the NSW Environment Protection Authority (NSW EPA).



This waste material is to be placed into the first asbestos waste bag at the work face and sealed. This bag is to then be placed into a second waste bag away from the work face (but within the work area). Each bag is to separately 'goose necked' and sealed with tape. The waste material is to be wetted prior to placement in the bag.

# 7 AIRBORNE ASBESTOS FIBRE MONITORING

Monitoring for airborne asbestos fibres should be carried out at all times throughout the duration of the asbestos contaminated soil removal work by a licenced asbestos assessor (LAA) engaged by PF Civil.

Monitoring is to be carried out in accordance with the requirements of the National Occupational Health and Safety Commission (NOHSC) Code of Practice for the Safe Removal of Asbestos, particularly the 'Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres' 2<sup>nd</sup> edition [NOHSC:3003(2005)]. Analysis of the air monitoring filters is to be carried out by a NATA accredited laboratory.

Air monitors are to be placed in the decontamination / change area and on the temporary fencing or barricade surrounding the asbestos removal work area. Up to four monitors are to be placed on the perimeter of the asbestos removal work area.

The daily reports of the results of the air monitoring will be forwarded to PF Civil.

The NOHSC recommended maximum exposure level for airborne asbestos fibres, measured as a time weighted average over an 8 hour work shift, is 0.1 fibres per millilitre of air (0.1 fibres/ml).

The NOHSC Code of Practice for the Safe Removal of Asbestos details control levels for airborne asbestos fibre concentrations that are to be observed during the work. These control levels are as follows:

| Airborne fibre<br>concentration<br>(fibres/ml) | Control Measure   |
|--|---|
| <0.01  | Continue work using existing asbestos dust control measures                   |
| <u>&gt;</u> 0.01                               | Continue work and review asbestos dust control measures                       |
| <u>&gt;</u> 0.02                               | Stop work, identify cause of dust emissions and revise dust control measures. |



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Asbestos Management Plan for the Removal of Asbestos Contaminated Fill Soil, Kyeemagh Public School Jacobson Avenue & Beehag Street, Kyeemagh NSW

# VALIDATION INSPECTION AND SAMPLING

At the completion of the asbestos removal work across the nominated eastern area within the site, a visual inspection is to be undertaken to verify that the exposed soil surface across the area in work was completed is free of visible asbestos containing material. This inspection is to be carried out in accordance with the requirements of Section 3.10 of the How to Safely Remove Asbestos Code of Practice issued by Safe Work Australia.

This inspection is to be undertaken by walking over the nominated area of the site in a systematic manner at 2 metre intervals in a north / south direction. A second walkover inspection at 2 metre intervals is then to be undertaken in an east / west direction.

Validation soil samples are to be collected by the environmental consultant with sampling to be undertaken in accordance with the sample design guidelines issued by the NSW EPA. The number of soil samples is to be in accordance with the validation sampling requirement in the remediation action plan prepared for the site.

Soil sampling is to be carried out in accordance with the methodology detailed in the "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 issued in 2013 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009".

A validation report detailing the scope of the remediation work, findings of the visual inspections is to be compiled. The validation report is to contain copies of all waste disposal documentation, airborne asbestos fibre monitoring reports and soil sample analysis reports. The validation report is to be prepared in accordance with the NSW EPA contaminated site guidelines.



9

# PROCEDURE FOR DEALING WITH UNEXPECTED FIND OF ASBESTOS CONTAINING MATERIAL OUTSIDE OF ASBESTOS REMOVAL WORKING AREA

Whilst undertaking the asbestos contaminated soil removal work at the site, and during the remaining in-ground work, there is a possibility that previously unidentified asbestos containing material may be encountered outside of the asbestos removal area at the site.

In the event that asbestos containing material is identified outside of the asbestos removal work area, the following procedure is to be followed:

- 1. Upon discovery of a fragment(s) of asbestos cement or other asbestos containing material (or suspected asbestos containing material) all work in the immediate area is to cease.
- 2. The worker discovering the material is to inform his supervisor who in turn will advise the LAA.
- 3. The LAA will arrange for the area to be secured to prevent disturbance of the material. Where necessary, temporary fencing and warning signs are to be placed around the area.
- 4. The LAA will arrange, if necessary, for a sample of the material to be analysed to confirm the presence / absence of asbestos fibres.
- 5. Where the material is confirmed as containing asbestos, the asbestos removal contractor is to remove the material for disposal asbestos contaminated waste.
- 6. Where the material consists of a small number of fragments of asbestos cement sheet, asbestos PPE including disposable gloves is to be worn during the collection of the material. The fragment(s) will be picked up and the glove turned inside out to 'bag' the fragment(s). The disposable glove containing the fragment(s) of asbestos cement sheet will then be placed directly into an asbestos waste bag for disposal.
- 7. The area is to be visually inspected by the LAA to verify that all of the asbestos containing material has been removed. A clearance report is to be compiled following the inspection.
- 8. Where a larger quantity of asbestos containing material is identified, the soil containing the asbestos containing material is to be excavated in accordance with the procedure detailed in Section 5 above. A visual inspection and validation sampling is to be undertaken and the details of this work are to be recorded in the validation report.

The above procedure is summarised in the following flowchart:







# 10 REFERENCES

- NSW Work Health & Safety Act 2011.
- NSW Work Health & Safety Regulation 2017.
- How To Safely Remove Asbestos Code of Practice issued by Safe Work Australia, October 2018.
- How To Manage and Control Asbestos in the Workplace issued by Safe Work Australia October 2018.
- NSW Protection of the Environment Operations (General) Regulation 2009: Reg 92.
- NSW Protection of the Environment Operations (Waste) Regulation 2014: 'Sections 77 -81.
- National Environment Protection (Assessment of Site Contamination) Measure. Schedule B (1) - Guideline on Investigation Levels for Soil and Groundwater (May 2013).
- enHEALTH Management of Asbestos in the Non-Occupational Environment (2005).
- NSW Environment Protection Authority (EPA) Waste Classification Guidelines Part 1: Classification of waste (November 2014).



**APPENDIX 1** 

SITE PLAN





Site plan with the red shaded area showing the approximate location of the asbestos contaminated fill soils

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APPENDIX 11: CONSTRUCTION SOIL & WATER SUB PLAN



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# CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN OUR REF:7863

# KYEEMAGH PUBLIC SCHOOL JACOBSON AVENUE, KYEEMAGH NSW 2261

PREPARED BY: CAMERON AMRI DATE: 03/07/2020 REVISION: **E** 

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# DOCUMENT VERIFICATION

| Project Title   | Kyeemagh Public School                      |
|---|---|
| Document Title Construction Soil and Water Management |   |
|   | Report                                      |
| Project No.   | 7863  |
| Description   | Construction soil and water management plan |
| Client Contact  | Taylor Constructions                        |

|             | Name           | Signature    |
|-------------|----------------|--------------|
| Prepared by | Cameron Amri   | Correron Ami |
| Checked by  | Michael Grogan |              |
| Issued by   | Michael Grogan |              |

# **REPORT DELIVERABLES**

This report is to meet condition B17 of the SSD Conditions.

This report shall be referenced to meet condition B12 & B17 of the SSD Condition of application number SSD 9439.

| Condition | Condition requirements  | Document reference                     |
|-----------|---|--|
|           | The Applicant must prepare a Construction Soil and Water<br>Management Sub-Plan (CSWMSP) and the plan must address,<br>but not be limited to the following:<br>be prepared by a suitably qualified expert, in consultation with<br>Council;<br>describe all erosion and sediment controls to be implemented<br>during construction including, as a minimum, measures in<br>accordance with the publication Managing Urban Stormwater:<br>Soils & Construction (4th edition, Landcom 2004) commonly<br>referred to as the 'Blue Book'. | Appendix B & Appendix C.<br>Appendix D |
| B17       | include an Acid Sulfate Soils Management Plan, including<br>measures for the management, handling, treatment and<br>disposal of acid sulfate soils, including monitoring of water<br>quality at acid sulfate soils treatment areas;   | Section 2.2 & Appendix A               |
|           | provide a plan of how all construction works will be managed in<br>a wet-weather events (i.e. storage of equipment, stabilisation of<br>the Site);  | Section 5.4 & Appendix D               |
|           | detail all off-Site flows from the Site; and  | Section 2.5 & Appendix D               |
|           | describe the measures that must be implemented to manage<br>stormwater and flood flows for small and large sized events,<br>including, but not limited to 1 in 1-year ARI and 1 in 5-year ARI.  | Section 5.4                            |

|     | Management plans required under this consent must be           |             |
|-----|--|-------------|
|     | prepared in accordance with relevant guidelines, and include:  |             |
|     | (a) detailed baseline data;                                    | Section 2   |
| B12 | (b) details of:  | Section 1.1 |
|     | (i) the relevant statutory requirements (including any         |             |
|     | relevant approval, license or lease conditions);               |             |
|     | (ii) any relevant limits or performance measures and criteria; | Section 6   |
|     | and  |             |

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| (iii) the specific performance indicators that are proposed to | Section 6.5                 |
|--|-----------------------------|
| be used to judge the performance of, or guide the              |                             |
| implementation of, the development or any management           |                             |
| measures;  |                             |
| (c) a description of the measures to be implemented to         | Section 6 & Appendix D      |
| comply with the relevant statutory requirements, limits, or    |                             |
| performance measures and criteria;                             |                             |
| (d) a program to monitor and report on the:                    | Section 6.5.5 & 6.5.6 &     |
| (i) impacts and environmental performance of the               | 6.5.7                       |
| development;   |                             |
| (ii) effectiveness of the management measures set out          | 6.5.7                       |
| pursuant to paragraph (c) above;                               |                             |
| (e) a contingency plan to manage any unpredicted impacts       | Appendix A                  |
| and their consequences and to ensure that ongoing impacts      |                             |
| reduce to levels below relevant impact assessment criteria as  |                             |
| quickly as possible;   |                             |
| (f) a program to investigate and implement ways to improve     | Section 5                   |
| the environmental performance of the development over          |                             |
| time;  |                             |
| (g) a protocol for managing and reporting any:                 | Section 6.4 & 6.5.5 & 6.5.6 |
| (i) incident and any non-compliance (specifically including    |                             |
| any exceedance of the impact assessment criteria and           |                             |
| performance criteria);   |                             |
| (ii) complaint;  | 6.5.7                       |
| (iii) failure to comply with statutory requirements; and       | 6.5.6                       |
| (h) a protocol for periodic review of the plan and any updates | 6.5.5                       |
| in response to incidents or matters of non-compliance          |                             |
|  |                             |

# DOCUMENT HISTORY

| Date     | Revision | Issued to  | Description      |
|----------|----------|------------|------------------|
| 03/07/20 | -A       | DWP Suters | DRAFT Issue      |
| 30/07/20 | -В       | DWP Suters | DRAFT Issue      |
| 30/07/20 | -C       | DWP Suters | For CC1          |
| 14/09/20 | -D       | Taylors    | For Construction |
| 14/09/20 | -Е       | Taylors    | For Construction |

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# 1

# 1 EXECUTIVE SUMMARY

Birzulis Associates have been commissioned by Taylor Constructions to prepare a Construction Soil and water Management Plan (CSWMP) for the proposed stage 1 and stage 2 construction at Kyeemagh Public School. This report addresses the site conditions and the management of such site conditions relevant to soil and water management in accordance with the requirements of the relevant Council DCP/SSD Guidelines.

The aim of this CSWMP is to address all risks associated with the water quality, erosion and sedimentation ensuring these are considered and managed effectively during construction. This reports aims to deliver a best-practice control and procedures to minimise or avoid erosion/sedimentation impacts and potential impacts to water quality.

The CSWMP will address and satisfy the following objectives:

- Relevant environmental legislation as it applies to this project
- Summarise and address potential water quality impacts on the environment from the proposed works on the proposed site
- Document procedures to control these possible and foreseeable environmental impacts.
- Ensure and demonstrate compliance to relevant legislation
- Ensure there are no adverse environmental impacts to the waterways and surrounding environment as a result of the proposed works.
- Address and comply with water quality discharge requirements for the site.
- Prevent pollution of surface water by sedimentation and excessive erosion of the site.
- Ensure staff and relevant construction personnel and procedures and an understanding of what is required to maintain and implement the required water quality elements and controls.
- Document all controls and mitigation for a 1 in 100 year flood event at the site.

Stage 1 of the proposed works involves the demolition of the existing buildings to the North-East of the site and construction of the buildings on that half of the site.

Stage 2 of the proposed works will occur approximately after practical completion (PC) of the stage 1 works and the demolition of the existing buildings to the South-West half of the site.

Both stages of the development will require:

- Demolition of the existing structures and removal of waste.
- Removal of topsoil and vegetation.
- Civil works and stormwater drainage works including connecting to the existing Council trunk drainage system.
- Construction of temporary roadway and turning circle for construction vehicles/equipment withing the envelope of the stage works.
- Remediation of temporary works and construction of hardstand pavements
- Construction of landscaping works

### 1.1 PLANNING RELEVANCE, LEGISLATION & ACT

The following legislation and regulatory framework relating to construction soil and water management are outlined below.

Immediate SSD Planning Requirement to be satisfied:

• As stipulated in the State Significant Development Conditions of Consent. Condition B17 required prior to the commencement of construction.

# Environmental Planning and Assessment Act 1979 & Environmental Planning & Assessment Regulation 2000.

This Act and regulation establishes a system of environmental planning and assessment of development proposals for the State. This project has been assessed and approved under Section 89E of the Environmental Planning and Assessment Act 1979.

Project Relevance; Approval process for a legal Consent to develop and considerations for such.

#### Protection of the Environment Operations Act 1997

This Act includes all the controls necessary to regulate pollution and reduce degradation of the environment, provides for licensing of scheduled development work, scheduled activities and for offences and prosecution under this Act.

Project Relevance; This Act is of high relevance to the Project as it provides for the issuing of environmental protection notices to control work and activities not covered by licences. Section 148 of the Act requires a pollution incident-causing or threatening material harm to the environment to be notified to the EPA and other authorities immediately.

#### **Contaminated Land Management Act 1997**

This Act provides for a process to investigate and remediate land that has been contaminated and presents a significant risk of harm to human health. Section 60 of the Act is a "Duty to Report Contamination". This duty applied to owners of land and persons who become aware that their activities have contaminated the land.

Project Relevance; The relevance of this Act will be in the event that suspected or potentially contaminated ground is found during construction activities.

#### **Commonwealth Environment Protection and Biodeversity Act 1999**

The main purpose of this Act is to provide for the protection of the environment especially those aspects that are of national environmental importance and to promote ecological sustainable development. The Act binds the Crown. Do not take, use, keep or interfere with "nationally significant" cultural and natural resources, protected wildlife and protected plants without approval.

Project Relevance; This Act is of little relevance to this project as it has been determined not to trigger the provisions of the act.

#### Soil Conservation Act 1938

This Act makes for the provision for the conservation of soil resources, farm water resources and the mitigation of erosion. The Act is binding on the Crown; however, the Crown is not liable for prosecution. The Act provides for notification in the government gazette catchments where erosion is liable to cause degradation of rivers and lakes (i.e. protected land).

Project Relevance; This Act has low relevance as the site is not located within "protected land". Further, such notification has not been given to the owner of the land.

#### Water Management Act 2000 & Water Management (General) Regulation 2004

This Act and Regulation provide for the protection, conservation and ecologically sustainable development of water sources of the State and in particular to protect, enhance and restore water sources and their associated ecosystems.

Project Relevance; This Act has no direct relevance at this time to the construction work under this contract. The project approval does not trigger the provisions of this Act

#### Water Act 1912

This Act provides for licences to extract water for construction purposes either from surface or artesian sources. Should construction water be extracted from surface (other than sedimentation ponds) or artesian sources, a licence will be required.

Project Relevance; This Act has no relevance as it is not proposed that construction water will be obtained from surface (for example, creeks, lakes) or artesian sources.

#### **Rivers and Forseshores Improvement Act, 1948**

The Rivers and Foreshores Improvement Act, 1948, is administered by DIPNR for regulating operations involving excavation and fill within the immediate vicinity of coastal rivers, lakes and estuaries. Under this Act, a Part 3A Permit is required for the undertaking of works within 40 metres of the bed and banks of a watercourse. By late 2003, the Water Management Act 2000 (WMA) will have repealed the Rivers and Foreshores Improvement Act, 1948 (RFIA). When this occurs, activities that require a Permit under Part 3A Approvals under the RFIA will require Controlled Activity Approvals under the WMA

Project Relevance; Nil as not within 40mof the bed and banks of a watercourse.

# 2 EXISTING CONDITIONS

# 2.1 LOCATION

The site is located at 30A Jacobson Avenue, Kyeemagh NSW 2216 is broken up into two lots D.Ps (D.P.120095 & D.P. 335734). The current site is the operating site of Kyeemagh Public School. The site is generally sparsely planted and with minimal hard pavements.

To the North-West the site abuts a previous townhouse villa style development. To the South-East the site abuts Beehag Street. To the South-East the site abuts Jacobson Avenue. To the North-East the site abuts the school childcare centre which operates on the site and is not proposed to be altered. The site falls from the West to the South East at approximately 4%.

The total site area is 10 329m<sup>2</sup>.

The site is shown below represented as Figure 2.1



Figure 2.1.1 – Total D.P. Envelope



Figure 2.1.2 - Overall Site Plan

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Figure 2.1.3 - Aerial View of Kyeemagh Public School (Source: Google Map 2020)

## 2.2 ACID SULFATE SOILS

A review of the Acid Sulfate Soil Map from the Rockdale Council LEP shows the site to be in a Class 2 Acid Sulfate Soil area. Should acid sulfate soils be encountered they shall be dealt with in accordance with the Acid Sulfate Soils Management Plan located as Appendix A.

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Figure 2.2.1 – Extract from Rockdale LEP 2011

A review of the Geotechnical report completed by Cardno showed soil test pH levels from 6.1 to 7.7 which is considered neutral.

Acid sulfate soil planning maps are indicative and on-site observations and testing should also be used to identify acid sulfate soils. The below shall be used to use visual guidance for more specific onsite assessment.

Potential acid sulfate soil indicators:

- Presence of mangroves, reeds, rushes, salt marsh or swamp vegetation etc
- Sulfurous (rotten egg gas) smell after rain, following a dry spell or when the soils are disturbed Marine or estuarine sediments
- Soils can be described as unripe muds/sediments (soft, buttery, blue grey or dark greenish grey) which can include sands and gravels

- Milky blue/green water
- Shell fragments in the soil Waterlogged, scalded or back swamp areas
- Land below 5m AHD elevation

Actual acid sulfate soil indicators:

- Any jarosite (a pale yellow mineral deposit) or iron oxide (rusty) colouring
- Extensive iron stains on any drain surfaces, or iron stained drain water and ochre deposits
- Corrosion of concrete and/or steel structures
- Surface or ground water on or draining from the site with a pH < 5.5, or of an unusually clear or milky green
- Sulfurous (rotten egg gas) smell when soils are disturbed

Class 2 Acid sulfate soils are where acid sulfate soils are likely to be found below the natural ground surface. Any works beneath the natural ground surface or works which are likely to lower the water table may encounter acid sulfate soils.

As the site is within an Acid Sulfate "likely" zone and there is cutting of soil proposed there is a risk acid sulfate soils may be encountered. We recommend further testing be undertaken in areas where soil levels are proposed to be reduced by 1m.

The referenced Acid Sulfate Soil Management Plan is the reference to manage the acid sulfate soil particularly for investigation, handling, treatment, and management of such soils.

The Acid Sulfate Soil Management Plan is referenced in this report and more relevant management and treatment of such soils are extracted and located in Appendix A. Section 4 & 5 of that report itemised the management procedures required to manage Acid Sulfate soil after it is identified.

Section 5.2 to 5.8 are attached in Appendix A is they specifically relate to mitigation and management of Acid Sulfate Soils for this site.

### 2.3 GROUND WATER PROTECTION

Generally possible sources of ground water contamination can be linked to :

• Industrial effluent and manufacturing wastes

- Leaking underground storage tanks and pipe lines (not stormwater/rainwater)
- Landfill stockpiles or contaminated soil producing leachate '
- Intensive agricultural fertiliser and pesticide use or waste generation
- Contamination from septic tanks and from sewerage and wastewater lagoons
- Mining industry processes and wastes
- Contamination from wells
- Urban stormwater
- Atmospheric fallout
- Inter-aquifer contamination by alteration of flow
- Chemical storage

We assess the operation use of the site is not such as to generate a risk to ground water contamination subject to correct chemical storage in line with MSDS's and safe work guidelines.

### 2.4 TEMPORARY EROSION AND SEDIMENT CONTROL BASINS

The requirement for sediment basins is carried out using a RUSLE calculation.

A=R K LS C P

- Where A = Computed soil loss (tonnes/ha/yr)
- R = rainfall erosivity factor = 2075
- K = slope erodibility factor
- LS = Slope length/gradient factor
- C = ground cover factor
- P = practice factor

| Variable                     | Value               | Remark                     |
|------------------------------|---------------------|----------------------------|
| Rainfall Erosivity (R)       | 3075                | From literature review     |
| Soil erodibility (K)         | 0.06                | Figure A3, The Blue Book   |
| Site slopes av               | Pre- 0.8% post 0.8% |                            |
| Slope Length (LS)            | 0.52                | Table A1, The Blue Book    |
| Erosion control practice (P) | 1.3                 | Table A2, The Blue Book    |
| Ground cover (C)             | 1.0                 | 50% grass cover as         |
|                              |                     | construction completed in  |
|                              |                     | stages Figure A5, The Blue |
|                              |                     | Book                       |
| Potential Erosion Hazard     | Low                 | Figure 4.6, The Blue Book  |
| Rainfall Zone                | Zone 1              | Figure 4.9, The Blue Book  |

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| Soil Density (kN/m³)              | 19                            | From geotechnical report |
|-----------------------------------|-------------------------------|--------------------------|
|                                   |                               |                          |
| Calculation soil loss A (t/ha/yr) | 125                           |                          |
| Soil Loss Class                   | 1 (erosion hazard = very low) | Table 4.2, The Blue Book |
| Soil loss (m³/ha/yr)              | 96                            |                          |
| Is a sediment basin required      | No                            |                          |

Where the soil loss from the catchment/s is less than 150m<sup>3</sup>/ha/yr then a sediment is not required as per Section 6.3.2.d of the Blue Book.

Nil

### 2.5 EXISTING STORMWATER DISCHARGE POINTS

The site operating as a public school has an existing pit and pipe system with an existing discharge to the Council trunk drainage system on Jacobson Avenue (located in the stage 2 envelope of works). The site also has a small depression within the site which normally would contribute to saturation of the soil however is not considered to do so given the high permeability of the soil (marine sand).

The low point of the site is located at the Eastern corner. The low point of the site is not proposed to be altered from the current condition. The overland flow water that discharges the site from this low point falls to Jacobson Avenue.

The existing stormwater elements from a visual survey undertaken revealed the onsite system to be in poor condition and blocked in many cases. We are proposing to clean the existing system for the construction works to not be surcharged by storm flows during the Stage 1 works.

The indicative external stormwater network is shown in **Error! Reference source not found.** and is t he Council trunk drainage system and is believed to be in a satisfactory condition.

# 3 GENERAL INSTRUCTIONS

This SWMP shall be read in conjunction with the latest engineering plans which have the Sediment and Erosion Control Plan and details, any other reports or design drawings and or any written instructions that concern themselves with water management of the site during construction and during the operational phase of the site. The Principle Contractor shall ensure that all soil and water management works recommendations are incorporated in works and undertaken in accordance with the Blue Book.

# 4 LAND DISTURBANCE CONDITIONS

Where practical, the soil erosion onsite will be as recommended below so the hazard will be as low as reasonably possible.

| Land Use           | Scope                         | Remarks                          |
|--------------------|-------------------------------|----------------------------------|
| Construction areas | Disturbance to be no greater  | Barrier fencing and sediment     |
|                    | than within 5m from the edge  | fencing or similar fencing to be |
|                    | of any essential construction | used so all workers can clearly  |
|                    | activity shown on the plans   | identify these zones were        |
|                    |                               | appropriate.                     |
| Access areas       | Maximum 6m in width           | Site manager to define the       |
|                    |                               | zones onsite and all workers to  |
|                    |                               | clearly be able to identify      |
|                    |                               | these zones                      |
| Remaining Lands    | Fenced off                    | Identified by barrier fencing    |

# 5 ASPECTS, IMPACTS AND RISKS

## 5.1 STORMWATER QUANTITY

Normally the removal of existing stormwater eleemtns during construction increases the surface flow volumes and velocities on a site. This can then increase movement of debris silt and scouring of water channels.

DRAINS software was used to generate runoff modelling that represents the existing and post development stormwater conditions. A summary of peak flows is shown below.

As the site discharge in located in stage 2 this is advantageous. There should be no significant change to the site runoff during construction as the envelope of the buildings being demolished in stage 1 is comparatively small. The intent is to maintain the existing stormwater pipe discharge from the site for the majority of the buildings (which are in the stage 2 envelope) while the stage 1 works are constructed. As part of the stage 1 works a new stormwater discharge is to be constructed and a stage 1 infiltration system. Based on storm events up to the 50 year storm the infiltration tank will not overflow to the new connection. As such we consider stormwater quantity to be reduced post construction and during construction.

## 5.2 STORMWATER QUALITY

Bulk earth works, vegetation clearing activities during construction phases, if not managed adequately, can lead to increased soil displacement. This element is considered adequately managed in the Sediment and Erosion Control Plan and relevant details.

The post construction stormwater quality runoff for the relevant catchments are required to meed requirements for Council compliance and for GreenStar Compliance.

The construction is proposing to meet a 2 point targer under Credit 26 Stormwater for this project which places the pollution reduction target as per Colum B shown below.

| Aim of Credit       | To reward projects that minimise peak storm water outflows from the site and reduce pollutants entering the public stormwater infrastructure or other water bodies. |    |    |                   |  |
|---------------------|---|----|----|-------------------|--|
| Compliance Criteria | All stormwater discharged from the site must meet the Pollution Reduction<br>Targets outlined in column B or C as a minimum of the following table:                 |    |    |                   |  |
|                     | Pollutants Reduction Target (% of the ty<br>load)   |    |    | ical urban annual |  |
|                     |   | A  | В  | С                 |  |
|                     | Total Suspended<br>Solids (TSS)1  | 80 | 80 | 90                |  |
|                     | Gross Pollutants  | 85 | 90 | 95                |  |
|                     | Total Nitrogen (TN)2  | 30 | 45 | 60                |  |
|                     | Total Phosphorus<br>(TP)2   | 30 | 60 | 70                |  |
|                     | Total Petroleum<br>Hydrocarbons3  | 60 | 90 | 90                |  |
|                     | Free Oils3  | 90 | 90 | 98                |  |

# 5.3 FLOODING

Construction works can sometimes generate additional site runoff contributing to flooding of adjacent or downstream sites during significant rainfall events or in the absence of relevant flood protection measures such as temporary water containment.

This has been provided for this site using the two infiltration tanks. As such the construction stormwater runoff will be less than the current site runoff.

The site flood level is RL 2.65m for the 100 year ARI storm event which places the site above this level meaning the site material stockpile locations will be safe from significant migration during this event.

### 5.4 WET WEATHER EVENT MANAGEMENT

As noted above the site is unaffected by flooding up to the 100 year even based on the site levels. This will be further safe guarded by the raised site levels as per the approval.

There is a risk during large rain events that water runoff will result in sediment washing off site and or damage to the sediment and erosion control systems in place.

The following mitigation measures will be implemented for the following scenarios

#### **General Management**

• forecast for heavy rain and make decisions on the following accordingly.

• storage of hazardous materials and equipment away from flow paths and known drainage channel

• layout of site compound facilities to take into consideration of the flow paths which are shown on the sediment and erosion control plans and the civil drawings.

• ensure evacuation routes are kept clear during high risk periods based on weather and storm forecasts.

• ensure loose materials, fuel, chemicals and equipment can either be secured or removed during a flood event if required

• equipment shall be covered as required if runoff from equipment can be hazardous or create sediment or oil displacement.

#### 1-year ARI

- Brief personnel at prestart
- Review of all current ERSED controls and ensure ESCP is still current
- Stormwater would be managed using the following controls
  - o Sediment fencing
  - o Diversion bunds / swales
  - o Coir logs/ sandbags/ silt socks

• Upstream stormwater runoff is expected to bypass the site using the swale system proposed. Other runoff will be minimum given the moderate infiltration rate and be handled by the ESCP.

#### 5 Year ARI

- Implement as above for the 1-year ARI event
- Ensure all plant and equipment are removed from areas of concentrated flow
- Sedimentation basins maximum capacities will be maintained where practically possible

100 Year ARI

- Implement as above for the 1-year ARI event
- Remove all plant and equipment from site areas where there is potential for inundation
- Perimeter controls are not expected to be breached.

• Flow will be directed to the street for the existing buildings in placeprior to commencement of the stage 2 works. There will always be a site connection to the street for site water to be drained based on the stage 1 system or the existing system which is to remain prior to commencement of stage 2 works.

# 6 CONSTRUCTION IMPACTS

# 6.1 EROSION CONTROL

Erosion control is primary to a erosion and sediment control strategy. This can be achieved through:

- Limiting the area of disturbance and only disturbing what is required. Also limiting the time period of disturbance.
- Integrating elements that reduce or control the volume of water moving over surfaces. This includes, diversion through swales and table drains, and piped or lined channels to stabilised outlets.
- Measures the slow the velocity of water over exposed surfaces within the construction area such as hay bail barriers, introducing roughness, flow check measures, textiles, binding compounds or exposed surface protections. Binding products and surface protection can be spray on stabilisers, mulches, blankets, temporary vegetation and permanent progressive landscape construction.

The above is achieved using the correct implementation of the Erosion and Sediment Control Plan shown on the engineering drawings and any other recommendations in this report.

To achieve the requirements of not concentrating water flows which can lead to transportation of sediment off site it is recommended the swales on the stormwater design drawings be constructed as soon as practicable to divert upstream water around the site.

### 6.2 SEDIMENT MANAGEMENT

This is secondary to erosion control in minimising water pollution as a result of construction. Where required sediment basins are generally located at the low points of site discharges.

Requirements for sediment control basins are in accordance with Section 6.3.2.d of the Managing Urban Stormwater: Soils and Construction (the Blue Book). The soil loss from the catchment is led than that required for a sediment basin and as such one is not required.

## 6.3 STOCKPILE STABILISATION

As there is significant volumes of fill being proposed for the site it is foreseeable that material stockpiles will be required unless can be demonstrated as other by the Builder Taylor Constructions. Stockpiles within the site which will be in effect for more than 10 days should be stabalised. As per the Erosion and Sediment Control Plan all stockpiles are to have sediment fences on the downstream

slopes and generally should be located a minimum of 5m from overland flow swales. If unused for 10 days then stockpiles shall also be stabalised in accordance with the below relative to the relevant material in the stockpile:

- Coarse grained stockpiles
  - Downstream perimeter rock armouring.
- Less coarse grained stockpiles
  - Polymer binder application
  - Application of hydro-seed or hydromulch.

### 6.4 HAZARDOUS MATERIALS

Hazardous material can often be transported to the site for construction purposes or from the site in the form of asbestos removal during demolition works. This will be addressed in accordance with the Construction Waste Management Sub-Plan (CWMSP) condition B16 prepared by others.

### 6.5 MANAGEMENT MEASURES

#### 6.5.1 Topsoil management

As part of works topsoil is to be stripped and stockpiled for use later in the project. Stopsoil stockpiles shall be treated as per the requirements of stockpiles noted above.

### 6.5.2 Wind Erosion Management

At a minimum, exposed areas will be watered regularly to minimise dust and water carts to be readily available as this is an ongoing process. Additional watering may be required on windy days.

### 6.5.3 Site Drainage

As noted above, the swales are to be constructed as soon as practicable and treated in accordance with the above. This will prevent external catchment runoff penetrating the site. A bentonite impregnated geotextile liner will be used (Bentofix or equivalent) in unsealed sections of the working areas. This will form a suitable barrier to prevent contaminants from working areas entering the ground water or contaminating the soil of the site.

### 6.5.4 Revegetation Earthworks

Areas where earthworks have been completed are to be stabalised within ten days in accordance with the above recommendations. All erosion and sediment control are to remain inplace until stabilisation or revegetation is established. All stabalised areas are to be free of vehicle traffic to prevent disturbance.

Stabalisation of earthworks include, but are not limited to the following:
- o Mulch covers
- Latex tape sprays
- Bitumen emulsion sprays
- o Tarp cover
- o Grass seeding

For areas stabalised with seeding, regular watering is required until an effective ground cover has been established. Re-seeding may be required in areas if inadequate coverage.

### 6.5.5 Maintenance Controls

Erosion and sediment control measures should be inspected and maintained regularly, generally daily and within 24 hours of each rainfall event. The site supervisor should be responsible for this to be undertaken. It is recommended the daily inspection be recorded including the following relevant information:

- o Condition of each element noted on the Erosion and Sediment Control Plan
- Any maintenance requirements of each element
- Volume of sediment removed and if the location of the element is appropriate. Disposal method of site trapped sediment.
- Condition of site entry and gravel rip/rap
- $\circ\quad \text{Condition of stockpile protection if relevant}$
- o Site stormwater disposal location conditions
- $\circ$   $\;$  Drains checked to ensure adequate site runoff and for signs of erosion
- Any sediment erosion control linings
- Condition of revegetation works if relevant.

It is recommended these are sent to the Superintendent weekly.

### 6.5.6 Auditing

Auditing of the above and importing of soil material and controlled fill shall be monitored and tracked in accordance with the CEMP condition B13 of the CoC.

### 6.5.7 Responsibility

The Contractor is deemed to have the following responsibilities in relation to Soil and Water Management of this site:

- To ensure all works noted above are undertaken as instructed and generally in accordance with the Blue Book (Managing Urban Stormwater – Soils and Construction, Landcom 2004.
- All sub-contractors are made aware of their responsibilities in this area and made accountable.
- o Checks are completed in accordance with the above Maintenance Controls (6.5.5)

## 7 REFERENCES

Geotechncial report by Cardno reference 5017190151 dated 23 January 2019 Schematic Design Report – Civil prepared by Birzulis Associates Pty Ltd dated 24 June 2020 revision C Rockdale LEP 2011 – Part 6.1 Acid sulphate soils Rockdale DCP 2011 Landcom (2004) Managing Urban Stormwater: Soils and Construction known as the Blue Book Acid Sulfate Soils Management Plan prepared by Cardno reference 80818157 dated 23 January 2019. 8 APPENDIX A – Acid Sulfate Soil Management Plan

## Cardno

Acid Sulfate Soils Management Plan Kveemaah Infants School

## 4 Acid Sulfate Soil Management Strategy

The following sections detail the management strategy for ASS on the project, and management measures to be applied in the event that ASS is disturbed. The management measures will apply to disturbance of natural soils at depths of 7 mBGL and greater. Precautionary measures including inspection should be undertaken for any disturbance of soils at and below the water table (nominally 3.8 to 3.9 mBGL) if required.

All earthworks, ASS treatment and stockpiling of soil must be undertaken in accordance with the project environmental controls and management plans. The Contractor is required to review the applicable plans and satisfy themselves that works on the site conform to requirements detailed in all applicable documents including this ASSMP.

Cardno has evaluated various options for the management of ASS on the site during construction works. These are discussed in subsequent sections.

### 4.1 Avoidance Strategies

During detailed design of the project, opportunities to reduce the disturbance of ASS on site have been identified. The avoidance of disturbing ASS beneath the Site has been selected as the primary mitigation measure for the project. In general, relatively limited disturbance of natural soils will be required, and works with the exception of piling for the main building foundation are currently proposed to occur above the water table, and not disturb ASS.

### 4.2 Minimisation of Disturbance

The likelihood and duration of disturbance should be minimised through detailed project planning. In general, efforts should be made to:

- Reduce the amount of ASS disturbed during the project;
- > If ASS is to be disturbed, minimise the duration untreated soil is stockpiled; and
- > Reduce the duration soil surfaces (including excavations) are left exposed.

Cardno has been advised that in accordance with the project mitigation strategy of disturbance avoidance that Screw / Helical Piles have been selected as an appropriate piling method for the building foundation piles which will require penetration of the ASS. This method removes the need for the exposure and potential oxidation of ASS by eliminating spoil return from pile borings. Should other methods of piling be required due to design or construction constraints, the contingency measures below should be employed.

### 4.3 Excavation Inspection

During excavations into natural soils that encounter the water table or depths of 7 mBGL inspection of excavated spoil should be undertaken by a suitably trained person for indictors of ASS. These excavations may include building footings, water tank installation pits, and infiltration system pits. If indicators such as sulphurous odours, organic matter, mottling or staining are observed, a suitably qualified environmental scientist should be engaged to undertake confirmation sampling for the presence of ASS as required. If ASS is identified, the contingency protocols in the sections below will be implemented.

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Acid Sulfate Soils Management Plan Kyeemagh Infants School

## 5 Contingency Protocols

The following section details the contingency protocols for management measures in the event that works on site require excavation and treatment of ASS and/or groundwater interference or dewatering.

### 5.1 Excavated Soils

If soils identified as PASS are to be treated promptly following excavation (refer to **Section 5.1.4** for maximum stockpiling durations). Treatment should be achieved through the addition of the prescribed quantity of lime to the soil followed by mechanical mixing to ensure the lime is evenly mixed through the soil. Mechanical mixing of soils can be undertaken using earthmoving equipment, pug-mills or similar.

A review of analytical results obtained from the soil investigation programs undertaken on the site (Cardno 2019a) showed  $S_{CR}$  concentrations ranged from 0.05 to 0.35 %S. This ASSMP has taken a conservative approach and based the liming or neutralisation rate on the highest  $S_{CR}$  concentration (0.35 %S). The liming dosing rate for this project has been calculated in general accordance with the guidance contained within the ASSMAC Guideline (Stone et al., 1998).

Specifically, the lime dosing rate calculation incorporates:

- Sulfur concentrations as Net Acidity;
- > An Effective Neutralising Value (ENV) of 1 (pure, finely ground lime with a particle size <0.3mm); and
- > A safety factor of 1.5.

The liming rate for excavated PASS on site is 8.8 kg of lime per tonne of soil. Note for geotechnical purposes to improve the physical properties of the soil a higher liming rate may be required, if so designated by the Geotechnical Engineer.

If an alternative neutralising media is selected (i.e. using crushed limestone or other low ENV coarse granular material) a re-calculation of the neutralisation equation should be undertaken and the liming rate adjusted accordingly.

### 5.1.1 Excavation Surface

If excavated surfaces are to remain exposed, these exposed surfaces should also be applied with the lime at the rate specified in **Section 5.1**. To minimise further disturbance of Potential Acid Sulfate Soils below the final excavation level, the lime should be mixed into the upper 100mm of residual soil, then validated against the performance criteria specified in **Section 5.1.2**.

### 5.1.2 Soil Treatment Performance Criteria

The following performance criteria should be met to confirm effective neutralisation of soils:

- > The neutralising capacity of the treated soil must exceed the existing plus potential acidity of the soil (e.g. pH<sub>FOX</sub> must be > 5);
- > The neutralising material has been thoroughly mixed with the soil pH must be in the range 6.0 to 8.5;
- > Excess neutralising agent must remain within the soil until all acid generation reactions are complete and the soil has no further capacity to generate acidity.

If the performance criteria above are not met, additional rounds of lime treatment should be undertaken until the criteria are satisfied.

### 5.1.3 Validation Testing

Following lime treatment of excavated soils, soil validation sampling is required to confirm the effectiveness of the treatment. Stockpile samples should be collected at the rate specified in Table 1 of the ENM Order (NSW EPA, 2014) and analysed for  $pH_F$  and  $pH_{FOX}$ .

For the purpose of assessing the QA/QC performance of the soil validation testing program 5% of samples (1 in 20) should be submitted for acid – base accounting at a laboratory NATA accredited for such analysis.

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### 5.1.4 Stockpiling Durations

Where ASS are to be treated and re-used on site, short term stockpiling is permissible. The maximum stockpiling durations for untreated soils are summarised in **Table 5-1**.

| Table 5-1 Maximum ASS St | lockpiling Duration |
|--------------------------|---------------------|

| Material Type                                       | Approximate Clay Content (%) | Maximum Duration of Stockpiling |
|---|------------------------------|---------------------------------|
| Coarse texture<br>Sands to loamy sands              | ≤5                           | 14 days                         |
| Medium texture<br>Sandy loams to light clays        | 5-40                         | 21 days                         |
| Pyritic peat  | N/A                          | 21 days                         |
| Fine texture<br>Medium to heavy clays & silty clays | ≥40                          | 28 days                         |

### 5.1.5 Soil Treatment Area

ASS treatment of stockpiled soils should be conducted on a purpose constructed treatment pad for the mechanical application of the neutralising agents and/or for short-term stockpiling of soils.

DER (2015) provides recommendations for the minimum construction requirements for Acid Sulfate Soils Treatment pads. The treatment pad may be constructed to either of the following general specifications:

- > Constructed using an alkaline material, such as crushed limestone or lime-treated material with a minimum thickness of 300 mm and a 150 mm high bund around the edges. The pad should be compacted to minimise infiltration and be graded such that rainwater runoff is directed to a collection point within the pad.
- > An impervious physical barrier such as a bunded concrete slab, compacted clay or layer of bitumen may be used as a treatment pad. In this case the base layer should be slightly domed or sloped to prevent leachate from pooling in the treatment pad, with a run-off collection drain constructed at the margins of the pad to manage run-off.

Treatment pads should be located on stable ground, away from overland flow paths and preferably in locations where bund and run-off / leachate collection pond construction does not disturb in situ ASS. Treatment pads should be set up to allow maximum treatment batch sizes of 500 m<sup>3</sup> at a time as it can be difficult to representatively sample larger batches, and re-treatment of large failed batches is expensive.

If earthworks are to be undertaken during a period where significant rainfall is expected the pad construction will also need to incorporate a lined sump area to enable collection of run-off for appropriate treatment. Runoff collected in this manner shall be directed to a dewatering effluent treatment area for assessment and treatment if necessary.

### 5.2 Groundwater Management

Groundwater monitoring results to date have indicated that groundwater at the site has of pH of between 6 and 7, which is considered representative of rainwater infiltration, however should disturbance of ASS on the project be required, it is recommended that further monitoring be conducted to monitor possible impacts.

Groundwater monitoring should be undertaken during construction or when dewatering, if there are sustained exceedance of the adopted surface water performance criteria and/or by visual evidence of impact (e.g. widespread jarosite mineralisation, stressed vegetation or impact to flora / fauna).

If required, groundwater monitoring would likely be conducted using the existing bore network, or with supplementary bores for the purposes of:

- > Detection of groundwater impact potential resulting from the disturbance of ASS and/or dewatering;
- Assessment of up-gradient (background) groundwater quality;
- > Estimation of groundwater flow direction.

If required, groundwater monitoring should include field gauging of groundwater water levels and physicochemical parameters (pH, redox potential, electrical conductivity, dissolved oxygen, temperature):

80818157 | 23 January 2019 | Commercial in Confidence

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Acid Sulfate Soils Management Plan Kyeemagh Infants School

- > Once a week during dewatering.
- > Once approximately one month following completion of construction works.

Groundwater monitoring with collection of samples for analytical testing should be conducted in accordance with methodologies outlined in AS NZS 5667.11 - 1998 Water Quality - Sampling Part 11 Guidance on Sampling of Groundwaters.

Groundwater samples should be analysed for pH, electrical conductivity, heavy metals, nutrients and anions and cations. If groundwater monitoring shows deterioration in groundwater quality additional monitoring should be undertaken.

### 5.3 Additional Contingencies

### 5.3.1 Weather Events

It is the responsibility of the Principal Civil Contractor (PCC) to take precautions in response to environmental conditions or adverse weather events. The principal weather related risk for this project is likely to be heavy rainfall events, given the project location. The PCC should prepare procedures that detail the proposed responses to forecast heavy rainfall events. These procedures should consider the risks posed by flooding of the work site, stockpiling locations and the ASS treatment areas.

### 5.3.2 Over Liming

Where lime treatment of the soil results in overshooting of the upper pH performance criteria (pH 8.5), the PCC should segregate this soil from other soils on the site. The advice of an environmental professional should be sought in relation to potential management / disposal options, having consideration for the alkalinity of the soil, and the potential for the discharge of alkaline water as run-off.

Potential disposal options include:

- > Blending of the soil with other untreated ASS materials;
- > Deep burial of the soil; and
- > Disposal of the soil to landfill.

### 5.3.3 Offsite Disposal of Soil

Where offsite disposal of treated ASS is required, this material should be classified in accordance with the NSW EPA (2014) Waste Classification Guidelines. Due to the presence of Acid Sulfate Soils, Part 4: Acid Sulfate Soils of the NSW EPA (2014) Waste Classification Guidelines will apply to natural soils at depth identified as PASS, which details timing for excavation and disposal requirements as well as the licensing requirements for landfills accepting the soil.

## 9 Appendix B – CV of Engineer



## CAMERON AMRI SENIOR CIVIL & STRUCTURAL ENGINEER

Bachelor of Engineering in Civil Engineering University of Technology Sydney

## Professional memberships

Member of the Institution of Engineers, Australia Chartered Professional Engineer (CPEng) Registered on the National Engineering Register (NER) Registered Professional Engineer of Queensland

### Experience

Since completing his degree in 2007, Cameron has worked as a civil structural engineer for MLH, Kneebone & Beretta, E2 Design and for Birzulis Associates Pty Ltd.

### A selection of projects Cameron has been involved in:

### Aged Care

- HammondGrove, Hammondville
- Scalabrini Village Bexley
- Scalabrini Village Drummoyne
- Scalabrini Village Austral
- Scalabrini Village Chipping Norton
- Scalabrini Village Griffith
- Scalabrini Village Yoogali

### Religious

- Our Lady of Mount Carmel
- · Catholic Parish of Mary Immaculate

### Education

- Thomas Reddall High School
- Westmead Public School
- Springwood High School

- Chifley Campus
- Parramatta West Public School
- Blacktown Tafe
- · Wiley Park Girls High School
- Chester Hill High School
- Doonside High School
- Westfield Sports High
- Ingleburn High School
- Wenona School, North Sydney
- Granville Public School
- Bellevue Hill Public School
- Riverstone High School
- Mount Annan Public School
- Matthew Pearce Primary School
- Mount Druitt Tafe
- NirimbaTafe

## 10 Appendix C – Evidence of Consultation with Council

## **Post Approval – Consultation**

Consultation needs to be meaningful, done with courtesy and respect and be well documented. These are people/ organisations that we need to be building meaningful relationships with.

Conditions of all consent can require consultation with a range of stakeholders. Consultation in the post approval world needs to be well documented to satisfy the condition requirements.

Examples include Council, service providers (eg. Electricity gas etc.), consult with local bus provider and TfNSW.

Read each condition carefully, any reference to consult triggers consultation.

Typically on State Significant Development, there will be a specific consultation condition as to how this piece can be appropriately addressed.

Consultation is not:

- A token gesture
- Done at the end of the piece of work,
- An email to the relevant stakeholder with no response;
- A meeting with the stakeholder with no meeting minutes.

Consultation is:

- Meaningful
- Done prior to the requirement,
- Captures an outcome,
- Identifies matters resolved,
- Identifies matters unresolved,
- Any disagreements are disclosed; and
- How we are going to address unresolved matters?

How to capture all the relevant details on consultation requirements? Any consultation requirement in a condition is required to be accompanied with the following table:

## Post Approval Consultation Record

| Identified Party to        | Bayside Council   |
|----------------------------|---|
| Consultation type:         | Dhana and amail correspondence  |
|                            | Priore and email correspondence   |
| required?                  | During the Design phase, prior to construction  |
| Why                        | Condition Number B17 and Condition requiring consultation with Council requiring        |
| -                          | the report be prepared in Consultation with Council.                                    |
| When was consultation      | Phone conversation with 2 July 2020 and email correspondence.                           |
| scheduled/held             | Email correspondence on 2 July 2020.  |
|                            | Email correspondence on 3 July 2020.  |
|                            | Email on 7 July 2020  |
|                            | Phone discussion 30 July 2020   |
|                            | Email 5 August 2020   |
|                            | Email on 3 September 2020   |
| When was consultation      | As per the above  |
| held                       | As per the above.   |
| Identify persons and       | Christopher Thompson from Bayside Council   |
| positions who were         |   |
| involved                   |   |
| Provide the details of the | Phone conversation with the above and the author of this report 2 July 2020 and         |
| consultation               | email discussing the project. Introduction to the type of project and the overall civil |
|                            | design intent. Specifically, the biological control and the infiltration system         |
|                            | proposed and Construction Soil and Water Management Plan.                               |
|                            |   |
|                            | Email correspondence on 2 July 2020 with the above and the author of this report        |
|                            | sending copy of the civil drawings to Bayside Council including DRAINS file.            |
|                            |   |
|                            | Email correspondence on 3 July 2020 with the above and the author of this report        |
|                            | discussing infiltration system maintenance requirements and access to provide           |
|                            | maintenance to infiltration system.   |
|                            | Empiler 7 July 2020 with the phase and the pather of this report conding convert        |
|                            | Email on 7 July 2020 with the above and the author of this report sending copy of       |
|                            | the first version of this report to Council as required under the requirements of       |
|                            | Consulting with Council.  |
|                            | Phone discussion with Christopher Thompson discussing the Construction Soil             |
|                            | and Water Management Plan draft that was sont for Council response and the              |
|                            | biological controls. It was agreed that we would provide biological control             |
|                            | biological controls. It was agreed that we would provide biological control             |
|                            | upstream of the Initiation System and there were no supulations from Council            |
|                            | regarding the Construction Soli and Water Management Plan.                              |
| What specific matters      | Biological control Construction Soil and Water Management Plan infiltration             |
| were discussed?            | system types and maintenance, and software modelling                                    |
|                            | system types and maintenance, and software modeling.                                    |
| What matters were          | Infiltration system specific product was approved.                                      |
| resolved?                  |   |
| What matters are           | On phone conversation today Birzuils has agreed to provide biological control           |
| unresolved?                | upstream of infiltration system. Please note this is not related to Construction Soil   |
|                            | and Water Management Plan. There are no unresolved matters regarding this               |
|                            | report. We had to comment on the biological control as it comes up as upresolved        |
|                            | in the attached email correspondence. We have verbal confirmation with                  |
|                            | Christopher Thompson from Bayside Council there are no unresolved matters               |
|                            | nertaining to this report. We have agreed to continue consulting regarding the          |
|                            | stormwater biological control   |
|                            |   |

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| Any remaining points of<br>disagreement?     | Nil regarding this report's scope.               |
|--|--|
| How will SINSW address matters not resolved? | There are no matters unresolved for this report. |

### Cameron Amri

| From:<br>Sent: | Christopher Thompson <christopher.thompson@bayside.nsw.gov.au><br/>Monday, 14 September 2020 12:21 PM</christopher.thompson@bayside.nsw.gov.au> |
|----------------|---|
| To:            | Cameron Amri  |
| Subject:       | RE: KYEEMAGH Public School  |
| Attachments:   | Construction Soil and Water Management Plan Kyeemagh Public rev D.pdf   |

### Hi Cameron,

I can confirm it is acceptable and I have no issues with the Construction Soil and Water management Plan.

### Best regards,



Christopher Thompson Development Engineer 444-446 Princes Highway, Rockdale NSW 2216 T 02 9562 1645 E christopher.thompson@bayside.nsw.gov.au Www.bayside.nsw.gov.au

From: Cameron Amri [mailto:camri@birzulisassociates.com] Sent: Monday, 14 September 2020 12:04 PM To: Christopher Thompson <Christopher.Thompson@bayside.nsw.gov.au> Subject: RE: KYEEMAGH Public School

Hey mate,

Hope you had a great weekend.

I'm getting grief from SiNSW that I need firm "evidence" that I have consulted with Council about this report. I have commented that we have discussed all the issues and the only area that initially was unresolved that is now resolved is the biological control given we have inputted treatment upstream of the biological system. Is there any chance that you can respond to say Council has no issues with the proposed report. The latest report is attached.

### Regards



From: Cameron Amri Sent: Thursday, 30 July 2020 8:56 AM To: Christopher Thompson <<u>Christopher.Thompson@bayside.nsw.gov.au</u>> Subject: FW: KYEEMAGH Public School

Hey mate,

Hope you are having a great week. Any comment on this report. Is Council happy with it?

### Regards

From: Cameron Amri Sent: Tuesday, 7 July 2020 12:35 PM To: Christopher Thompson <<u>Christopher.Thompson@bayside.nsw.gov.au</u>> Subject: RE: KYEEMAGH Public School

Hello again,

Hope you are having a great week. I'm required by the State Significant Development CoC to "consult with Council" regarding this report. Attached is the draft report.

I think the report will help to understand our argument that there is no significant need to treat water as part of biological control as the site is not an industrial site with a chemical operational cycle but I think we can add some for of treatment system for the car park water which would be good to filter prior to the infiltration system. I'm happy to update the plans to reflect that.

### Regards



From: Christopher Thompson <Christopher.Thompson@bayside.nsw.gov.au> Sent: Friday, 3 July 2020 11:33 AM To: Cameron Amri <<u>camri@birzulisassociates.com</u>> Subject: RE: KYEEMAGH Public School

Hi Cameron,

I could not review the drains file for some reason. Anyway I have attached the calculation spreadsheet we have on file for your review.

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The music model must be run and treatment measures shall be made prior to stormwater entering the infiltration system (infiltration system cant be used for stormwater treatment). The results should be attached to the stormwater plans at the end and details for treatment measures provided.

Happy to have ACO stormbrixs used, you just need to be certifying that design is acceptable with regards to achieving the requirements of Rockdale Technical Specification Stormwater Management.

Emergency overflow needs to be addressed to ensure that no ponding occurs within the school.

Maintenance needs to be provided for to ensure that the system can be readily and easily maintained. This should be via pits that are readily accessible i.e. 900x900mm wide. Does the manufacturer address maintenance for ACO strombrixx? Could you provide this information to me?

All pits are to be provided with Child proof J-Locks or similar.

Best regards,



Christopher Thompson Development Engineer 444-446 Princes Highway, Rockdale NSW 2216 T 02 9562 1645 E christopher.thompson@bayside.nsw.gov.au W www.bayside.nsw.gov.au

From: Cameron Amri [mailto:camri@birzulisassociates.com] Sent: Thursday, 2 July 2020 1:47 PM To: Christopher Thompson <<u>Christopher.Thompson@bayside.nsw.gov.au</u>> Subject: RE: KYEEMAGH Public School

DRAINS model is attached. There will be a balance pipe between the tanks which will make them work as one large tank but we have split in the design to take into account the staged construction.

### Regards



From: Cameron Amri Sent: Thursday, 2 July 2020 1:46 PM To: 'christopher.thompson@bayside.nsw.gov.au' <christopher.thompson@bayside.nsw.gov.au> Subject: KYEEMAGH Public School

### Hi Chris,

Thank you for your time. This is what I have in mind at this stage. I will be updating the plans to remove the granite paving as it doesn't comply with the EFS&G and upgrading infiltration tank 1 to a stronger product that can take vehicle loads. Also I will move tank 1 away from any possible vehicle loads as a safeguard just in case.

I will send the DRAINS file separately. There is also a MUSIC model but with infiltration and very little site run-off the targets are met very easily.

Basically all I'd like is Council approval for the use of this type of infiltration system and if you see any areas of uncompliance to Council's stormwater Guidelines.

### Regards



From: Ricketts, Luke <<u>Luke.Ricketts@aco.com</u>> Sent: Wednesday, 24 June 2020 10:43 AM To: Cameron Amri <camri@birzulisassociates.com> Subject: FW: ACO STORMBRIXX KYEEMAGH

Hi Cameron,

Great to meet you yesterday.

ACO's StormBrixx HD tank is recommended for the Kyeemagh Public School project. See attached parts list, specification information and general installation drawings (2 Layer HD).

For the 100m<sup>3</sup> infiltration tank, the recommended StormBrixx HD tank has a size of 14.4m x 6m x 1.22m (2 layer). The tank has a net volume of 100.14m<sup>3</sup> (100.14kL) and gross volume of 105.41m<sup>3</sup>.

Customer to check and confirm tank size, geotextile, tank accessories and the number of access points are suitable for the project. Access shaft and access shaft riser recommended at the location of the inlet and outlet pipes, refer to page 24 in brochure.

4

The links below show the ACO StormBritox products installed in recent projects: https://www.acostormbritox.com.au/portfolio-item/canberra-data-centre-canberra-act/ https://www.acostormbritox.com.au/portfolio-item/azure-retirement-village-and-hub-canberra-act/

StormBritox Technical Handbook and Product Catalogue can be downloaded at: www.accstormbritox.com.au

Installation guidance: https://www.acostormbrixx.com.au/product-support/installation/

For design assistance on your next project, Click here.

Regards,

Luke Ricketts

Luke Ricketts | Specification Sales Representative ACO Pty Ltd 134-140 Old Bathurst Road | Emu Plains NSW 2750 Tel.+612 4747 4000 | Fax +612 4747 4040 Mobile +61 413 750 708 | Luke.Ricketts/Baco.com http://www.acoaus.com.au/

# 11 Appendix D – Erosion and Sediment Control design drawings

Drawings prepared by Birzulis Associates Pty Ltd. The latest version of each of these documents and this report should be used at all stages during the construction.



SOIL EROSION AND SEDIMENT CONTROL PLAN

DIRECTORS B Fimmano B.E. (Hons), M.I.E. Aust., C.P.Eng. M A Grogan B.E., M.Eng., M.I.E. Aust., C.P.Eng. ASSOCIATE DIRECTOR P W Grogan B.E. (Hons), M.E.(Struct), M.I.E. Aust., C.P.Eng. CONSULTANT A J Birzulis OAM, B.E., M.Eng. Sc., F.I.E. Aust., C.P.Eng.



### GENERAL NOTES.

 THIS PLAN IS A CONCEPT PLAN ONLY FOR STORMWATER DISPOSAL & EROSION CONTROL IT IS NOT SUITABLE FOR CONSTRUCTION. THIS PLAN SHOULD BE ADAPTED BY THE BUILDER DURING DEMOLITION, EXCAVATION & CONSTRUCTION PHASES TO ENSURE ADEQUATE PIERFORMANCE.

 ALL DRAINAGE LAYOUT & DETAILS ARE DIAGRAMMATIC & INDICATIVE ONLY: ACTUAL LOCATION, SIZES, LEVELS & GRADES MAY LATER WHEN DETAIL DESIGN WORKS ARE DOCUMENTED.

### EROSION & SEDIMENTATION CONTROL NOTES

1. CONTRACTOR SHALL PROVIDE SEDIMENT FENCING MATERIAL DURING CONSTRUCTION TO THE LOW SIDE OF THE WORKS, THE SEDIMENT FENCING MANTERIAL TO CYCLORED WRITE SECURITY FENCE. SEDIMENT CONTROL FABRIC SHALL BE AN APPROVED MATERIAL (SE MAINES FROMEWS LISTOP) STANDING 300mn ABOVE GROUND & EXTENDING 150mm BLOW GROUND.

2. EXISTING DRAINS LOCATED WITHIN THE SITE SHALL ALSO BE ISOLATED BY SEDIMENT FENCING MATERIAL.

 NO PARKING OR STOCKPILING OF MATERIAL IS PERMITTED ON THE LOWER SIDE OF THE SEDIMENT FENCE.

4. GRASS VERGES SHALL BE NWNTAINED AS MUCH AS PRACTICA TO PROVIDE A BUFFER ZONE TO THE CONSTRUCTION SITE.

S. CONSTRUCTION ENTRYIEXIT SHALL BE VIA THE LOCATION NOTED ON THE DRAWING. CONTRACTOR SHALL ENSURE ALL DROPPARLE SOL & SEDEMENT IS RIMOVIDE PRIOR TO CONSTRUCTION TRAFFIC EXITING SITE. CONTRACTOR SHALL ENSURE ALL CONSTRUCTION TRAFFIC ENTERING & LEAVING THE SITE DO SO IN A FORWARD DIRECTION.

NOTE: THIS PLAN IS TO READ IN CONJUNCTION WITH THE CONSTRUCTION SOIL AND WATER NANAGEMENT PLAN.





# BIRZULIS ASSOCIATES Pty Ltd



# TAYLOR

APPENDIX 12: PROJECT REMEDIATION ACTION PLAN & ADDENDUM RAP

# **Remediation Action Plan**

Kyeemagh Infants School, Corner of Jacobson Avenue and Beehag Street, Kyeemagh NSW

80818157

Prepared for DWP Australia Pty Ltd

24 January 2019





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| Rev0    | 24/01/2019     | Final Report              | BW           | RC              |
|         |                |                           |              |                 |

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## **Executive Summary**

Cardno (NSW/ACT) Pty Ltd (Cardno) was engaged by DWP Australia Pty Ltd (The Client) to prepare a Remediation Action Plan (RAP) to guide and inform the remediation of soils at Kyeemagh Infants School, corner of Jacobson Avenue and Beehag Street, Kyeemagh NSW. The Site is proposed to be redeveloped from its current configuration as an infants school into a K-6 capable primary school.

The Site is located on a parcel of land that has been in use as a school since 1942. The Detailed Site Investigation (DSI) conducted by Cardno in 2018/9 identified areas of Contaminants of Potential Concern (COPCs) within soils requiring remediation or management. The identified areas of concern were an area of asbestos impacted soils above the adopted NEPM Health Screening Level (HSL) in the east of the site, an area of nickel impacted topsoil above the site specific Ecological Investigation Level (EIL) in the northern area of the site, and an area of hydrocarbon fractions  $C_{16}$ - $C_{34}$  impacted soil above the adopted NEPM Ecological Screening Level (ESL) beneath hardstand in the south west.

The objectives of the RAP are to define the soil remediation and validation requirements for the previously identified asbestos, nickel and hydrocarbon impacts at the Site. Additionally, the remedial strategies are designed to minimise the potential risks to human health and the environment relative to the proposed land use of the property as a primary school.

Cardno evaluated potentially applicable remedial alternatives to address the potential risks to human health and the environment. Due to the finalised design and business case for each option being pending at the time of this report, two remedial strategies are provided which will eliminate receptor pathways to the identified COPCs at the site. The recommended strategies involve a combination of off-site disposal of impacted soil, and on-site containment beneath hardstand. These strategies provide the most efficient option for remediating the site, taking advantage of soil removal required for construction purposes and the capping potential of hardstand for the new development.

The remedial strategies are to be performed jointly by an environmental consultant, occupational hygienist and a licensed contractor and will involve the following general steps:

## **Remediation Strategy 1:**

- 1. Stripping and excavation of asbestos and nickel impacted soils and disposal off-site at a licenced facility
- 2. Provision of an Asbestos Clearance Certificate for the removal of the asbestos impacted soils
- 3. Collection of soil validation samples from the walls and base of the resulting excavations
- 4. Importation of fill (if required) for landscaping, levelling and geotechnical requirements
- 5. Visual inspection and validation that hardstand has been restored across the hydrocarbon impacted area characterised by BH04.

### **Remediation Strategy 2**

- 1. Stripping and excavation of nickel impacted soils and disposal off-site at a licenced facility
- 2. Stripping and excavation of asbestos impacted soils and natural soils (if required) and stockpiling onsite
- 3. Disposal of any geotechnically unsuitable material (i.e. topsoil with organic material) off-site to a licenced facility
- 4. Provision of an Asbestos Clearance Certificate for the excavation of the asbestos impacted soils
- 5. Collection of soil validation samples from the walls and base of the resulting excavations
- 6. Emplacement of asbestos containing soils beneath a marker layer, capping layer and hardstand paving surrounding the school building
- 7. Importation of fill (if required) for landscaping, levelling and geotechnical requirements
- 8. Visual inspection and validation that hardstand has been restored across the hydrocarbon impacted area characterised by BH04
- 9. Development of a Long Term Environmental Management Plan (LTEMP) to ensure the long term effectiveness of the remedial strategy

This RAP also includes a Construction Environmental and Waste Management Plan, a Work Health and Safety Plan and a Contingency Plan in addition to waste classification and soil validation requirements.

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# 1 Introduction

Cardno (NSW/ACT) Pty Ltd ("Cardno") was engaged by DWP Australia Pty Ltd (DWP) to prepare a Remediation Action Plan (RAP) to guide and inform remediation of soils at Kyeemagh Infants School. The school is located on the corner of Jacobson Avenue and Beehag Street, Kyeemagh NSW 2216 ("the Site"). The Site is legally identified as Part Lot 1 within Deposited Plan (DP) 335734 and Lot 1 within DP 120095. The pre-school facility in the eastern portion of the Site is excluded from the scope of investigation. The location and features of the site are presented in **Figures 1** and **2** in **Appendix A**.

The Department of Education is proposing to redevelop the Site to increase its current capacity from a K-2 capable school to a K-6 capable school. The RAP has been prepared in accordance with the scope of works presented in Cardno's proposal dated 7 January 2019 in order to support submission of a Development Application for the site.

## 1.1 Background

The Site has an approximate area of 1.3 ha and is currently in use as an infant's school. The Department of Education is proposing to redevelop the Site to increase its current capacity from a K-2 capable school to a K-6 capable school. The development works will involve the demolition of all existing structures and construction of new facilities. The proposed development is declared as State Significant Infrastructure (Application Number SSD 9391) and in accordance with item 12.1 of the Secretary's Environmental Assessment Requirements (SEARS) for the project, a Detailed Site Investigation (DSI) was undertaken (Cardno, 2019a) in order to quantify any soil and groundwater contamination at the Site.

The findings of the DSI included identification of an area of bonded asbestos containing material (ACM) on and within soils in the eastern portion of the Site exceeding the adopted NEPM Tier I Health Screening Levels (HSLs) for continued use as a school. Additionally, an area of shallow topsoil was found to contain nickel concentrations above the adopted site specific Ecological Investigation Levels (EILs), an area of shallow fill was found to contain hydrocarbon fractions  $C_{16}$ - $C_{34}$  above the adopted Ecological Screening Level (ESL) and Potential Acid Sulfate Soils (PASS) were identified at depth. Further details on the findings of the DSI are provided in **Section 2**.

Based on the findings of the DSI, Cardno concluded that the identified impacts could be managed and remedied in order to render the site suitable for continued use as a school. Cardno recommended that a RAP should be prepared to detail the remedial process and validation requirements for the site. This RAP has been prepared to address this recommendation.

## 1.2 Objectives

The objectives of the RAP are to:

- > Define the remediation and validation requirements;
- > Evaluate the effectiveness of potential remedial options;
- Recommend the most appropriate remedial strategy that will render the site suitable for the proposed land use;
- > Establish the site validation criteria;
- > Outline the remedial process to be undertaken to achieve the selected remediation strategy for the site; and
- Outline a Construction and Waste Management Plan (CWMP), Workplace Health and Safety (WHS) requirements, and an unexpected finds protocol and contingency plan;

Additionally, the RAP includes measures to minimise the potential risks to human health and the environment during implementation of the remedial works and under the proposed future land use.

## 1.3 Scope of Work

In order to meet the objects outlined in **Section 1.2** Cardno undertook the following scope of works:

 Defined the Site, site features and history, areas of environmental concern and developed a Conceptual Site Model (CSM)

- > Identified remediation options suitable for identified COPCs;
- > Evaluated the various remedial options and identified the preferred remediation strategy;
- > Documented the process for implementation of the preferred remediation strategy;
- Development of a CEMP outlining environmental controls required for the duration of the works including an Unexpected Finds Protocol and contingency plan;
- > Detail environmental and Work Health and Safety (WHS) control measures and community consultation requirements associated with implementation of the preferred remedial strategy; and
- > Preparation of this RAP.

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## 1.4 Guidelines and Legislation

The scope of work outlined above was completed in general accordance with following guidelines and legislation:

- > ASSMAC (1998) Acid Sulfate Soils Assessment Guidelines, Acid Sulfate Soils Management Advisory Committee, August 1998;
- CCME (2010), Canadian soil quality guidelines: carcinogenic and other polycyclic aromatic hydrocarbons (PAHs) (environmental and human health effects), Scientific criteria document (revised), Canadian Council of Ministers for the Environment ,2010
- Friebel, E & Nadebaum, P 2011, Health screening levels for petroleum hydrocarbons in soil and groundwater. Part 1: Technical development document, CRC CARE Technical Report no. 10, CRC for Contamination Assessment and Remediation of the Environment, Adelaide, Australia;
- > HEPA (2018) *PFAS National Environmental Management Plan*, January 2018;
- NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure (NEPM).
   National Environment Protection Council (NEPC) 1999, Amendment 2013;
- > NEPC (2013) Schedule B(2) Guideline on Site Characterisation, NEPM 1999, Amendment 2013;
- NSW Department of Urban Affairs and Planning (1998) Managing Land Contamination: Planning Guidelines: SEPP 55 Remediation of Land, 1998;
- NSW EPA (1995) Contaminated Sites Sampling Design Guidelines. New South Wales Environment Protection Authority (EPA), September 1995;
- > NSW EPA (2017) Guidelines for the NSW Auditor Scheme (3rd edition), New South Wales Environment Protection Authority, September 2017
- NSW OEH (2011) Guidelines for Consultants Reporting on Contaminated Sites. New South Wales Office of Environment & Heritage (OEH), November 1997, Reprinted September 2000, Reprinted August 2011;
- Standards Australia (2005) Australian Standard AS 4482.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds. Standards Australia, Homebush, NSW; and
- Standards Australia (1999) Australian Standard AS 4482.2-1999 Guide to the sampling and investigation of potentially contaminated soil. Part 2: Volatile substances. Standards Australia, Homebush, NSW.

# 2 Site Identification and History

## 2.1 Site Definition

The site is approximately 8 km south west of the Sydney CBD. The site location and site plan are provided in **Appendix A** with site details presented below in **Table 2-1**.

| Item                       | Details  |
|----------------------------|--|
| Site Address               | Corner of Jacobson Avenue and Beehag Street, Kyeemagh NSW 2216 |
| Approximate Site Area (ha) | 1.3 ha   |
| Title Details              | Lot 1 DP 335734 and Lot 1 DP 120095                            |
| Local Government Area      | Bayside City Council   |
| Parish and County          | St George, Cumberland  |
| Current Site Owners        | The Department of Education                                    |
| Current Site Zoning        | R2 Low Density Residential                                     |

### Table 2-1 Site Definition and Details

## 2.2 **Previous Assessment Results**

Cardno was provided with the following previous reports relating to the Site:

- > Cardno (Cardno, 2019a) Detailed Site Investigation Kyeemagh Infants School, Corner of Jacobson Avenue and Beehag Street, Kyeemagh NSW, prepared for DWP Australia, January 2019
- > Parsons Brinckerhoff (PB, 2014a) Asbestos Remediation Clearance Certificate. Prepared 9 July 2014.
- Parsons Brinckerhoff (PB, 2014b) Asbestos in Grounds, Asbestos Management Plan, Kyeemagh Infants School, Kyeemagh, NSW. Prepared July 2014.

The Cardno 2019 DSI contains summaries of the PB 2014a and 2014b reports. A summary of the Cardno 2019 DSI is provided in **Section 2.2.1** below.

2.2.1 Cardno 2019 – Detailed Site Investigation - Kyeemagh Infants School, Corner of Jacobson Avenue and Beehag Street, Kyeemagh NSW, prepared for DWP Australia, January 2019

Cardno prepared a Detailed Site Investigation for the Kyeemagh Infants School site, excluding the North Brighton pre-school located adjacent the eastern site boundary, over the period November to December 2018. The objective of the DSI was to investigate the potential for soil and groundwater contamination at the site which may pose a risk to human health or the environment under the proposed redevelopment as a primary school.

The scope of work undertaken included a desktop site history assessment and field investigation. Based on the site history assessment, the Site has been used as a school since first being developed in 1942. The site configuration changed slightly over the years with the addition and removal of some structures. The land use surrounding the site is identified as generally low density residential housing, with the Cooks River and Muddy Creek being the closest bodies of water. Groundwater use in the area is generally for domestic and irrigation purposes, and there is reportedly one active bore on Site used for irrigation.

In order to investigate potential contamination at the site, Cardno advanced a total of 19 test pits, one hand auger and five boreholes across the site. The test pits and hand auger were advanced into natural soils, occurring between 0.2 and 1.2 metres below ground level (mBGL). Boreholes were advanced to depths of up to 17 mBGL within the proposed school building footprint, and depths of 5 mBGL in other areas for investigation of ASS. Three boreholes were converted into permanent monitoring wells to establish groundwater conditions at the site. Boreholes logs and a geological cross section are provided in **Appendix D**.

Cardno submitted soil, groundwater and fibre cement samples for analysis of Contaminants of Potential Concern (COPCs) associated with the site history, and ASS potential. Based on the analytical results the DSI identified the following:

> ACM was detected within soils and at the soil surface above the adopted human health screening levels in the grassed open area in the east of the site;

- Nickel concentrations within shallow topsoil exceeded the adopted ecological investigation levels adjacent to the staff carpark;
- Concentrations of the Hydrocarbon fractions C<sub>16</sub>-C<sub>34</sub> exceeded the adopted ecological screening levels at one borehole beneath asphalt hardstand, however it was determined that as this area was to remain capped by an impervious hardstand, there was a low potential for a complete source-pathway-receptor linkage and remediation was not considered necessary;
- > Soils at depths of 7 meters below ground level (mBGL) and greater were determined to be PASS; and
- Copper was detected in groundwater slightly above the adopted assessment criteria for marine waters within MW02, however this was qualified as likely being representative of regional groundwater quality.

Based on the analytical results, Cardno concluded that the likely sources of contamination were:

- > As a consequence of uncontrolled fill material;
- > As a consequence of demolition of buildings containing hazardous building materials; and
- > As a consequence of historical spills and leaks.

Cardno concluded that management and remediation of the identified impacts was required in order to render the site suitable for continued use as a school. Cardno recommended that remediation management or risk assessment would need to be undertaken and that a RAP and Acid Sulfate Soils Management Plan (ASSMP) should be prepared to address the identified impacts.

## 2.3 Site History Summary

Based on the available information, the Site is part of two lots and DPs that have been in use as a public school since 1942, and generally undeveloped land prior. Changes in site layout and surrounding properties such as the addition of buildings and infrastructure have occurred sporadically over time.

Cardno identified several minor sources of surface and subsurface impact listed above, indicating a limited area of surface soils and fill material impacted with bonded ACM, and an area of surface soils impacted with nickel which will require remediation or management. Additionally, soils at depth beneath the water table are considered to be PASS. Cardno concluded that the site could be made suitable for the intended use as a primary school if the areas of impact were addressed.

# 3 Site Conditions and Surrounding Environment

## 3.1 Site Description

The Site is currently used as an infant's school and has an area of approximately 1.3 ha. The land parcel is approximately rectangular in shape and is bounded by Jacobson Avenue to the South, Beehag Street to the west, and Tancred Avenue to the east. The northern boundary abuts low density residential housing. The western area of the Site contains the infant's school with classrooms, administrative buildings, amenities and recreation spaces. The centre of the site is primarily an open grassed play area. In the eastern area of the Site North Brighton Preschool occupies an approximately 1,700 m<sup>2</sup> area, which is excluded from the scope of the RAP. Figures detailing the Site location and surrounds, and plans for the proposed development are included in **Appendix A**.

Cardno conducted a site inspection on 10 November 2018 during field works for the DSI, with photographs from the site inspection included in **Appendix B**. Details of the observations made during the inspection are provided in **Table 3-1** below.

| Item   | Observations  |  |
|--|---|--|
| Current site use   | Current site use is as an infant's school   |  |
| Proposed site use  | Future site use is for redevelopment to remain as a primary school  |  |
| Site slope and drainage features                                   | Site elevation is approximately 5 mAHD and is relatively level. Local topography is generally level with minor undulations and mounds. Drainage in surrounding streets is expected to be through a pit and pipe network via street guttering.   |  |
| Vicinity Surface water bodies                                      | The Cooks River is located approximately 240 m east north east of the Site,<br>Botany Bay is located approximately 240 m south east of the Site, and<br>Muddy Creek is located approximately 330 m north west of the Site. Muddy<br>Creek drains into the Cooks River, which flows to Botany Bay.   |  |
| Site surface coverings   | The Site is mostly grassed, with areas of asphalt hardstand in play areas in<br>the south western area of the Site. A graveled carpark is present in the north<br>western corner of the Site accessed via Beehag Street.  |  |
| Surface soils  | Surface soils were visible in areas of sparse grass cover and consisted of sands and silty sands.   |  |
| Buildings  | <ul> <li>Eight buildings are present in the western area of the Site which comprise the infants school facilities. Buildings include;</li> <li>A demountable office and classroom building in the north adjacent the carpark</li> <li>A metal building housing the Sustainable Community Hub adjacent garden beds south of the office</li> <li>A brick library building south west of the office</li> <li>A clad classroom south of the Beehag Street entrance</li> <li>Two clad classroom buildings and a clad storage building adjacent the Jacobson Avenue boundary</li> <li>The preschool facility contains additional buildings which are not included within the investigation area.</li> </ul> |  |
| Potential asbestos in building materials                           | Potential asbestos containing materials were observed in some buildings generally consisting of wall cladding to the buildings in the south adjacent to Jacobson Avenue.  |  |
| Manufacturing, industrial or chemical processes and infrastructure | None observed.  |  |
| Fuel storage tanks (USTs/ASTs)                                     | None observed.  |  |
| Dangerous goods  | None observed.  |  |
| Solid waste deposition   | None observed.  |  |

Table 3-1 Site Inspection Observations

| Liquid waste disposal features                         | None observed.   |
|--|--|
| Evidence of previous site contamination investigations | None observed.   |
| Evidence of land contamination (staining or odours)    | Fibre cement material was observed at the soil surface adjacent the access gate in the north eastern corner of the site, and adjacent TP19 ( <b>Figure 3</b> , <b>Appendix A</b> ).  |
| Evidence of groundwater contamination                  | None observed.   |
| Groundwater use  | A functioning groundwater bore is present on site reportedly used for irrigation.  |
| Vegetation   | Mature trees are present primarily in the western infant's school area, and<br>eastern pre-school area. The remainder of the Site is generally grassed or<br>hardstand. Although grass cover was sparse in some areas, vegetation was<br>generally observed to be healthy. Vegetation is mapped as Urban Exotic /<br>Native (Native Vegetation of the Sydney Metropolitan Area, OEH) |
| Site fencing   | The site is enclosed by a metal security fence on the eastern, western and southern boundaries, and a timber fence on the northern boundary.   |

## 3.2 Surrounding Land Uses

Land uses surrounding the site are detailed in **Table 3-2** and a map of the surrounds in shown in **Figure 1**, **Appendix A**.

| Table 3-2 | Surrounding Land Uses |
|-----------|-----------------------|
|-----------|-----------------------|

| Direction | Land Use or Activity   |
|-----------|--|
| North     | Low density residential followed by Mutch Avenue, Kyeemagh RSL Club and Muddy Creek                |
| South     | Jacobson Avenue followed by low density residential, General Holmes Drive and Botany Bay           |
| East      | Tancred Avenue followed by low density residential and the Cooks River, followed by Sydney Airport |
| West      | Beehag Street followed by low density residential  |

The area is serviced by public roads and access to the site is available from Beehag Street to the west, and via a locked access way at the north eastern corner of the Site leading to Tancred Avenue.

## 3.3 Proposed Development

The proposed redevelopment aims to address demographic pressures identified in the Kogarah Primary Cluster by expanding the capacity of the school from a K-2 Infants School to K-6 primary school. The proposed school will have a capacity of up to 500 students. The redevelopment involves the demolition of all existing buildings in a staged process to allow the existing school to remain open. The concept design for the proposed development is included in **Appendix A**. New infrastructure includes;

- A main two storey building in the eastern area of the Site adjacent to the pre-school boundary, comprising the majority of the current grassed open area;
- > An administration building in the central southern area of the Site;
- > Hardstand and a hall building in the south west corner of the Site;
- > A games court and refurbished carpark in the north western area of the Site; and
- > Landscaping of the remainder of the Site.

## 3.4 **Topography and Drainage**

Site elevation is approximately 3 to 5 mAHD and is relatively level with a raised mound south of the Sustainable Community Hub. The local topography is generally flat with minor undulations and mounding. Surface water is expected to generally infiltrate into the sandy soils. Drainage in surrounding streets is by kerbside guttering. Likely stormwater discharge points are the Cooks River and Botany Bay.

## 3.5 Flood Potential

Cardno undertook a review of available flood mapping of the area surrounding the school in order to provide flooding advice (Cardno, 2018). The Cooks River Flood Study undertaken by Parsons Brinckerhoff for Sydney Water in 2008 indicates that the Site is unlikely to be affected by the 1% AEP or PMP flood events.

## 3.6 Regional Geology and Hydrogeology

### 3.6.1 Geology and Soil Landscape

The Soil Landscapes Map of Sydney 1:100,000 sheet indicates that the Site soils are comprised of Quaternary quartz sands with minor shell content, silt and fine sands (Qhbr). The NSW Office of Environment and Heritage eSPADE online GIS tool indicates that the site is characterised as part of the Tuggerah Soil Landscape, which is an Aeolian landscape with deep sandy soils with pH values ranging from 4.5 (strongly acidic) to 7.0 (neutral).

The subsurface profile encountered generally during the DSI (Cardno 2019a) consisted of topsoil and fill material consisting of sands and silty sands to a maximum depth of 2.2 metres below ground level (mBGL), with filling generally observed to be less than 1 m deep. Natural soils encountered generally consisted of sands and silty sands, with intermittent sandy clays present at greater depths.

The site is underlain by the Botany Sands Aquifer which is extensive, porous and highly productive. Groundwater flow is expected to be to the east towards the Cooks River or south towards Botany Bay with local variations in gradient. Static Water Levels (SWLs) gauged during the DSI (Cardno 2019a) from three monitoring wells on-site ranged between 3.8 and 3.9 metres below top of casing (ground level). Due to the proximity of the Site to Muddy Creek, the Cooks River and Botany Bay, groundwater at the Site may be tidally influenced.

## 3.6.2 Acid Sulphate Soils

The Rockdale Local Environment Plan 2011 lists the Site as within a Class 4 Acid Sulfate Soils (ASS) potential area, with a Class 3 area present to the north. There is potential for ASS to be present beneath the Site, and works below 2 m below ground level (mBGL), or which may lower the water table by 2m may pose an environmental risk. As part of the DSI (Cardno 2019a), an investigation into ASS beneath the Site was undertaken. Some potential indicators of ASS were identified during fieldworks (odour, shell inclusions), and analytical results confirm that Potential Acid Sulfate Soils (PASS) is present at the Site within sands and clays at depths greater than 7 mBGL.

## 3.6.3 **Salinity**

There is no data on the Salinity Hazard Map generated using the NSW planning Portal, therefore the potential occurrence of saline soil conditions at the Site is considered to be low.

# 4 Conceptual Site Model

This section summarises the previous environmental assessment and site historical information to confirm the Conceptual Site Model (CSM). Generally, a CSM provides an assessment of the fate and transport of COPCs relative to site specific, subsurface conditions with regard to their potential risk to human health and the environment. The CSM takes into account site specific factors including:

- > Source(s) of contamination;
- > COPCs associated with past and present site activities;
- > Vertical, lateral and temporal distribution of COPCs;
- > Site specific lithological information including soil type(s), depth to groundwater, effective porosity, and groundwater flow velocity and
- > Actual or potential receptors considering both current and future land use both for the site and adjacent properties, and any sensitive ecological receptors.

Based on the information sourced in the DSI, a CSM has been developed and is outlined in **Table 4-1**, below. Additional details are included in the sections that follow as necessary.

| Conceptual Site Model Element | Description  |
|-------------------------------|--|
| Contamination Sources         | <ul> <li>The sources of subsurface contamination include:</li> <li>uncontrolled placement of fill material</li> <li>uncontrolled demolition of buildings containing hazardous building materials</li> <li>historical spills and leaks</li> </ul>   |
| Site Current and Future Use   | Current site use is as an infant's school. Future site is as a primary school.   |
| Site Geology                  | Topsoil and fill material consisting of SAND and Silty SAND, underlain by medium to fine grain marine SAND and CLAY.   |
| Site Hydrogeology             | The Botany Sand Aquifer is present beneath the site. The SWL of groundwater at the Site measured from installed bores is 3.8 to 3.9 mBGL.  |
| COPCs - Soil                  | <ul> <li>The following COPCs have been identified above adopted Tier I screening criteria at the Site:</li> <li>Concentrations of asbestos have been detected within soils exceeding the adopted NEPM HSL at TP04, and fragments have been identified beneath turf at TP03, and at the soil surface adjacent TP19 and BH02;</li> <li>Concentrations of nickel have been detected exceeding the adopted Site Specific EIL at in two hotspots at TP06 and TP13;</li> <li>Concentrations of hydrocarbons (TRH C<sub>16</sub>-C<sub>34</sub>) have been identified exceeding the adopted NEPM ESL at BH04; and</li> <li>Potential Acid Sulfate Soils have been identified at depths greater than 7m at the site.</li> </ul>  |
| Extent of Impacts - Soil      | The vertical extent of TRH C <sub>16</sub> -C <sub>34</sub> impacted soils identified at sample location BH04 is considered to be limited to the depth of fill material (0.5 mBGL). The lateral extent has conservatively been estimated as the distance to the nearest clean location, with an indicative area of 1,500 m <sup>2</sup> . Concentrations of nickel were detected in surface soils greater than 2.5 times the adopted EIL in shallow surface soils at sample location TP06 and TP13. The vertical extent of impact is considered to be limited to the depth of fill (0.3 to 0.4 mBGL). The lateral extent has conservatively been estimated as the distance to the nearest clean location, with an indicative area of 1,300 m <sup>2</sup> , to be confirmed during remedial works. Concentrations of asbestos in soil exceeded the adopted HSL at sample location TP04 within shallow fill, with fragments noted at on the soil surface adjacent to sample locations TP03, TP19, and BH02. The vertical extent of impact is considered to be the depth of fill, which varies between 0.3 mBGL at BH01 and 1.2 mBGL at TP03. The lateral extent of impact is conservatively |

Table 4-1 Conceptual Site Model (CSM)

|                                   | estimated as the distance to the nearest clean location, with an indicative area of 2,200 $m^2$ , to be confirmed during remedial works.   |
|-----------------------------------|--|
| COPCs – Groundwater               | Copper was detected slightly above the NEPM GILs for marine waters in MW02 (0.002 mg/L).   |
| Extent of Impacts - Groundwater   | Given concentrations of copper within Site soils were within acceptable criteria,<br>and the urbanized nature of the site and surrounds, the concentrations are likely<br>to be a function of regional groundwater quality rather than a result of site<br>contamination. Given the distance to the nearest receiving body, and the low<br>levels detected, the potential risks from groundwater at the Site are considered<br>low and acceptable. |
| Potential Human Receptors         | Current and future users of the site, including students, staff, construction and maintenance workers. Current complete receptor pathways include an inhalation pathway to asbestos impacted soils.  |
| Potential Environmental Receptors | On-site vegetation communities, and off-site receptors including aquatic communities in the Cooks River and Botany Bay. Current complete receptor pathways include contact / uptake by on-site ecological communities (vegetation, soil biota) of nickel impacted soils.   |

## 4.2 Conceptual Site Model Summary and Risk Assessment

The following sections summarise the Conceptual Site Model and an evaluation of potential risks to human and environmental receptors. Consideration should be given to any data gaps or uncertainties described in **Section 4.3** below.

## 4.2.1 Asbestos in Soils

ACM in the form of fibre cement debris was identified at the soil surface in two locations adjacent TP19 and BH02, beneath turf at TP03, and within shallow fill material at TP04 exceeding the adopted Tier I HSLs. The potential area of impact is located in the eastern section of the Site, adjacent to the pre-school boundary fence. The fill material encountered within the area consists of sand and silty sand, with variable depths of between 0.3 and 1.2 mBGL.

During development and under the proposed site use the soils pose a potential low inhalation risk to construction personnel, site users, and off-site receptors and will require remediation, management or risk assessment to mitigate the risk and render the site suitable for the proposed land use. Prior to the redevelopment being complete, remediation would be undertaken to remove the completed receptor pathway. The inhalation risk is considered to be low due to airborne fibre monitoring undertaken as part of the DSI during soil disturbance being below the exposure standard.

## 4.2.2 Nickel in Shallow Soils

Concentrations of nickel were detected above the Tier I Site Specific EIL in shallow soils at two locations (TP06\_0.1 and TP13\_0.1) adjacent the staff carpark. The fill material encountered consisted of silty and gravelly sands and gravel to depths of between 0.3 and 0.4 mBGL.

Under the proposed site use the soils pose a potential risk to receptors such as on-site vegetation. According to the proposed development plans, the area characterised by TP06 and TP13 is proposed to be beneath the school building, expanded carpark, or landscaped. The landscaping of the area is indicated to involve removal of surface soils and import of topsoil. The proposed works are likely to remove the nickel containing soils, or mitigate their contact with on-site vegetation. As such, prior to the redevelopment being complete, the completed receptor pathway to on-site vegetation is to be removed.

## 4.2.3 TRH C<sub>16</sub>-C<sub>34</sub> in Soils

Concentrations of TRH fractions  $C_{16}$ - $C_{34}$  were detected above the adopted ESL at location BH04 beneath asphalt hardstand. Under the current and future site use, the area surrounding BH04 is to remain beneath hardstand, physically separated from ecological receptors such as on-site vegetation. Therefore, the source-pathway-receptor linkage is considered incomplete under the proposed redevelopment and no further action is considered necessary provided that the area remains as hardstand.

### 4.2.4 Potential Acid Sulfate Soils (PASS)

PASS have been identified beneath water table at the site at depths of 7 mBGL and greater. Works for the proposed development are unlikely to reach the water table or disturb PASS with the exception of piling for

building foundations. The mitigation strategies, contingency controls and requirements for management of PASS at the site are contained within the Acid Sulfate Soils Management Plan (ASSMP) prepared by Cardno (Cardno, 2019b).

## 4.3 Data Gaps and Uncertainties

The recommendation made in this RAP were based on conclusions made by Cardno based on the results of discrete sampling undertaken as part of the DSI. However, subsurface conditions (soil, sediment and groundwater) can be complex and heterogeneous with many unknown geologic interactions that may affect the movement and/or concentrations of potential contaminants. Therefore should previously unidentified areas of soil impacts be discovered during future phases of work at the Site, additional investigation will be required.

Given the presence of fill on the site, there is likely to be some variability in the quality and type of the fill. Due to the discrete nature of ACM in soil, there is potential for ACM to be present in other areas. An Unexpected Finds Protocol should be employed to manage any previously unidentified areas of potential contamination.

Due to the Site being a working school, investigations were unable to be undertaken beneath buildings and therefore represent a data gap in site characterisation. While these data gaps are not considered to represent an impediment to the proposed development, if these soils are to be disturbed, in the future these soils require classification to enable appropriate management.

# 5 Remediation Objectives

## 5.1 Remediation Objectives

The purpose of the proposed remedial works is to manage and remediate the identified asbestos, hydrocarbon and nickel impacts at the Site in such a way that the potential risks posed to human health and the environment are minimised or eliminated.

The primary objectives for the remedial works are to:

- Manage identified hydrocarbon impacts in soils in such a manner that the potential risk to the environment is minimised;
- Remediate or manage asbestos and nickel impacted soils in such a manner that the potential risk to human health or the environment is minimised; and
- Remediate or manage asbestos and nickel impacted soils in such a manner that the Site is made suitable for the proposed land use as a primary school.

Based on results of the DSI, the potential risk to ecological receptors from copper levels within groundwater was considered low and acceptable due to the distance to the nearest potential receptor, and the likely regional nature of the COPC concentrations reported in groundwater. As such, no remedial works are considered necessary for groundwater at the Site.

The proposed remedial works will include collection of additional soil samples to validate that the excavated soil can be re-used on site, and that soil remaining at the site is suitable for the continued use as a primary school. The Remediation Goals (RGs) for the remediation works are summarised below.

## 5.2 Soil Validation Remediation Goals

The soil validation RGs for the proposed remediation are based on the National Environment Protection Council (NEPC) formulated the National Environment Protection (Assessment of Site Contamination) Measure (NEPM) in relation to investigation levels for soil and groundwater in the assessment of site contamination (NEPC 1999a).

As detailed in **Section 2** and shown in **Appendix A**, the site is proposed to be redeveloped for continued land use as a primary school. As per NEPM guidance, the criteria for low density residential land use with accessible soils are applicable to primary schools. Therefore, the applicable soil RGs are as follows:

- > Asbestos
  - NEPM Health Screening Level (HSL) for asbestos contamination in soil for low density residential land use (HSL A)
- > Nickel:
  - Site Specific Ecological Investigation Levels (EILs) for nickel concentrations for continued low density residential land use (HIL C). These values are generated from on-site physiochemical soil parameters via the Ecological Investigation Level Calculation Spreadsheet, developed by CSIRO for the National Environment Protection Council.
- > Aesthetics:
  - Soils remaining onsite, particularly those near the soil surface, should not generate odour, be significantly stained, contain large quantities of inert waste or visible asbestos.

The quantitative validation criteria for each contaminant are provided in **Table 5-1** below.

| Table 5-1 | Soil Validation | Criteria |
|-----------|-----------------|----------|
|-----------|-----------------|----------|

| Analyte  | Guideline         | Validation Criteria    |
|--|-------------------|------------------------|
| Asbestos (ACM)                                 | NEPM HSL A        | 0.01% Weight / Weight  |
| Asbestos (Fibrous Asbestos and Asbestos Fines) | NEPM HSL A        | 0.001% Weight / Weight |
| Nickel   | Site Specific EIL | 8 mg/kg                |
### 5.3 Waste Classification Criteria

The soil analytical results collected during the DSI, remedial and validation works will be utilised to determine the waste classification of soil so it can be appropriately managed if transported off-site. The waste classification of the soil is based on the following guidelines:

- Natural soils at the site proposed for excavation have the potential for characterisation as Excavated Natural Material (ENM). To characterise natural soils as ENM, sample results will be compared to the chemical and other material property requirements included in Table 4 of the *Protection of the Environmental Operations* (Waste) Regulation 2014 – the excavated natural material order 2014 (ENM order).
- If natural soil and fill material at the Site do not meet the ENM classification, comparison of analytical results will be made to criteria detailed in the NSW DECCW (2014) Waste Classification Guidelines: Part 1: Classifying Waste for waste classification purposes.

#### 5.4 Triggers for Further Management

Further investigation or remediation may be required during the construction phase of the proposed works. Triggers for further management may include:

- > Unexpected finds including impacted (visually stained and/or odorous) soils during earthworks;
- > The presence of previously unidentified asbestos; and
- > The identification of buried waste.

Where the triggers for further management are identified, refer to **Section 9.6** for the measures to be implemented.

## 6 Data Quality Objectives

#### 6.1 Data Quality Objectives

The NSW EPA (2017) Guidelines for the NSW Site Auditor Scheme (3rd Edition), which is endorsed under s105 of the Contaminated Land Management Act 1997, requires that Data Quality Objectives (DQOs) be prepared for all assessment and remediation programs. The DQO process as adopted by the NSW EPA is described within US EPA (2000) Guidance for the Data Quality Objectives Process and Data Quality Objectives Process for Hazardous Waste Site Investigations.

The DQOs for the site investigation, as detailed within NSW EPA (2006), are summarised in Table 6-1 below.

| DQO Step                                     | Description  |  |  |
|--|--|--|--|
| Step 1<br>State the Problem                  | Environmental media at the site have been impacted with COPCs at concentrations above the Tier I screening guidelines. Remediation or management of soils necessary to render the site suitable for the intended land use as a primary school.   |  |  |
| Step 2<br>Identify the<br>Decisions          | <ol> <li>The decisions that must be made are:</li> <li>Identify suitable remedial strategies capable of mitigating the identified impacts?</li> <li>Which remedial strategy(s) will most effectively remediate the site for the intended land use considering Site specific constraints?</li> <li>How will the selected remedial strategy be implemented?</li> <li>What are the validation criteria and how will the remedial works be validated?</li> </ol>   |  |  |
| Step 3<br>Identify Inputs to<br>the Decision | <ol> <li>The primary inputs to the decisions described above are:</li> <li>Analytical results from previous investigations undertaken at the site;</li> <li>Screening criteria made or approved by the NSW EPA for sensitive land uses (i.e. primary schools)</li> <li>Analytical results of validation samples collected following excavation of impacted soils;</li> <li>Observations made during site works concerning aesthetic issues, including odours, staining and waste inclusions.</li> <li>An assessment of the suitability of the analytical data obtained, against the Data Quality Indicators (DQIs);</li> </ol>   |  |  |
| Step 4<br>Define the Study<br>Boundaries     | The study site is defined as Kyeemagh Infants School, being parts of Lot 1 DP 335734 and Lot 1 DP 120095.<br>The lateral extent of the study is shown in <b>Figure 2</b> , and excludes the New Brighton Preschool.<br>The vertical extent of sampling is limited to 2.2 mBGL for validation purposes and to the depth of proposed excavations for waste classification purposes.<br>The temporal extent of the study will remain valid provided that the current and proposed land use remains the same, and that no further sources of contamination are detected or introduced to the site. The conclusions are limited to information gained during sampling conducted for the DSI in 2018. The remedial and validation process is anticipated to the conducted concurrent with the property redevelopment which could last several years. |  |  |
| Step 5<br>Develop a<br>Decision Rule         | <ol> <li>The decision rules for the RAP include:</li> <li>The number of soil validation points will meet the requirements for validation of the COPCs identified as per NEPM guidance;</li> <li>Primary, duplicate and triplicate soil and groundwater samples will be analysed at National Association of Testing Authorities, Australia (NATA) accredited laboratories;</li> <li>Field and laboratory QA/QC results will indicate reliability and representativeness of the data set, as defined in Table 6-2 below;</li> </ol>  |  |  |

Table 6-1 Data Quality Objectives

| DQO Step                                       | Description  |
|--|--|
|  | <ol> <li>Laboratory Limits of Reporting (LORs) will be below the applicable guideline criteria for the<br/>analysed COPC, where possible;</li> </ol>   |
|  | <ol> <li>Applicable guideline criteria will be sourced from NEPM guidelines and other NSW EPA<br/>endorsed guidelines (as necessary);</li> </ol>   |
|  | 6. Any soil aesthetic issues will be evaluated including areas of discolouration, odour and hazardous waste inclusions;  |
|  | <ol> <li>If the concentration of a soil COPC in a sample is below the applicable guideline criteria, then<br/>no further assessment/remediation will be required with respect to that COPC;</li> </ol>   |
|  | 8. If the concentration of a COPC is less than applicable guideline criteria, then no further assessment/remediation will be required with respect to that COPC; and   |
|  | 9. If the concentration of a soil COPC in a sample exceeds the applicable guideline criteria, then additional works (e.g. remediation or quantitative risk assessment) may be required to minimise the risk.   |
| Step 6<br>Specify Limits on<br>Decision Errors | To ensure the results obtained are reproducible and accurate, a QA/QC plan is incorporated into the sampling and analytical program. DQIs are used to assess the reliability of field procedures and analytical results. In particular, the DQIs within NSW DEC (2006) are used to document and quantify compliance. DQIs are described as follows, and are presented in <b>Table 6-2</b> below: |
|  | 1. Completeness – A measure of the amount of useable data from a data collection activity;   |
|  | <ol> <li>Comparability – The confidence (expressed qualitatively) that data may be considered to be<br/>equivalent for each sampling and analytical event;</li> </ol>  |
|  | <ol> <li>Representativeness – The confidence (expressed qualitatively) that data are representative<br/>of each media present on the site;</li> </ol>  |
|  | 4. Precision – A quantitative measure of the variability (or reproducibility) of data; and   |
|  | <ol> <li>Accuracy (bias) – A quantitative measure of the closeness of reported data to the true<br/>value.</li> </ol>  |
| Step 7<br>Optimise the                         | To achieve the DQOs and DQIs, the following sampling procedures will be implemented to optimise the design for obtaining data  |
| Design for<br>Obtaining Data                   | <ol> <li>The number of soil sampling points for waste classification and spoil re-use will be in<br/>accordance with NEPM guidance and/or the NSW EPA Excavated Natural Material Order<br/>(2014)</li> </ol>   |
|  | 2. Soil samples will be collected from resulting excavations of impacted soils at the rate specified in the NEPM for validation of an area of the size produced  |
|  | 3. Soil COPCs will be selected based on the area of concern as identified by previous data obtained during the DSI   |
|  | 4. Samples were be collected by suitably qualified and experienced environmental consultants   |
|  | 5. Soil samples will be collected and preserved in accordance with relevant standards/guidelines   |
|  | 6. NATA accredited laboratories will be engaged for analysis of samples  |
|  | <ol> <li>Soil observations including odours, staining and visual identification of potential asbestos<br/>bearing material will assist with selection of samples for laboratory analysis and the extent of<br/>remediation</li> </ol>  |
|  | 8. Field and laboratory QA/QC procedures will be adopted and reviewed to indicate the reliability of the results obtained.   |

## 6.2 Data Quality Indicators

The following Data Quality Indicators (DQIs), referenced in Step 6 in **Table 6-1** have been adopted in accordance with the NSW EPA (2017) Guidelines for the NSW Site Auditor Scheme (3rd Edition). The DQIs outlined in **Table 6-2** assist with decisions regarding the contamination status of the site, including the quality of the laboratory data obtained.

Table 6-2 Data Quality Indicators

| DQI   | Frequency                             | Data Acceptance Criteria   |
|---|---------------------------------------|--|
| Completeness  |                                       |  |
| Field documentation correct   | All samples                           | All samples  |
| Soil bore logs complete and correct   | All samples                           | All samples  |
| Suitably qualified and experience sampler   | All samples                           | All samples  |
| Appropriate lab methods and limits of reporting (LORs)  | All samples                           | All samples  |
| Chain of custodies (COCs) completed appropriately   | All samples                           | All samples  |
| Sample holding times complied with  | All samples                           | All samples  |
| Proposed/critical locations sampled   | -                                     | Proposed/critical locations sampled  |
| Comparability   |                                       |  |
| Consistent standard operating procedures for collection<br>of each sample. Samples should be collected, preserved<br>and handled in a consistent manner | All samples                           | All samples  |
| Experienced sampler   | All samples                           | All samples  |
| Consistent analytical methods, laboratories and units   | All samples                           | All samples  |
| Representativeness  |                                       |  |
| Sampling appropriate for media and analytes (appropriate collection, handling and storage)  | All samples                           | All Samples  |
| Samples homogenous  | All samples                           | All Samples  |
| Detection of laboratory artefacts, e.g. contamination blanks  | -                                     | Laboratory artefacts detected and assessed   |
| Samples extracted and analysed within holding times   | All samples                           | -  |
| Precision   |                                       |  |
| Blind duplicates (intra-laboratory duplicates)  | 1 per 20 samples                      | 30% RPD, then review<br>RPDs >30% would be reviewed in<br>relation to heterogeneity of sample<br>and LOR |
| Split duplicates (inter-laboratory duplicates)  | 1 per 20 samples                      | 30% RPD, then review   |
|   |                                       | RPDs >30% would be reviewed in<br>relation to heterogeneity of sample<br>and LOR                         |
| Laboratory duplicates   | 1 per 20 samples                      | <20% RPD Result > 20 × LOR<br><50% RPD Result 10-20 × LOR<br>No Limit when<br>RPD Result <10 × LOR       |
| Accuracy  |                                       |  |
| Trip blanks   | 1 per sampling<br>event (as required) | COPCs <lor< td=""></lor<>  |
| Trip Spikes   | 1 per sampling<br>event (as required) | 70-130%  |
| Surrogate spikes  | All organic samples                   | 50-150%  |
| Matrix spikes   | 1 per 20 samples                      | 70-130%  |
| Laboratory control samples  | 1 per 20 samples                      | 70-130%  |



| DQI           | Frequency        | Data Acceptance Criteria |
|---------------|------------------|--------------------------|
| Method blanks | 1 per 20 samples | <lor< td=""></lor<>      |

## 7 Remediation Options

#### 7.1 Remediation Objective

The objective of the remedial works is to appropriately remediate or manage soil material at the Site identified with COPCs at concentrations above the NEPM Tier I screening guidelines to enable the site to be characterised as suitable for use as a primary school.

An evaluation of the applicable soil remedial options and identification of the recommended remedial strategy are included below.

#### 7.2 Remediation Options Hierarchy

Soil remedial strategies potentially applicable to the site were evaluated along the following remediation hierarchy which is based on the recommended NSW EPA screening process.

- 1. "Do Nothing" The 'do nothing' option involves not removing or addressing any of the identified impacts
- 2. On-site treatment of soil so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable limit
- 3. Off-site treatment of excavated soil so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable limit, after which the soil is returned to the site
- 4. Removal of contaminated soil to an approved site or facility, and if necessary replacement with imported fill, and
- 5. Isolation and management of the soil on-site by capping/containment within an appropriate barrier.

#### 7.3 Remedial Options Evaluation

Cardno has identified and evaluated the potential remedial options listed in the hierarchy above to provide a recommended remedial strategy to address the impacted soils at the Site. The options are described in **Table 7-1** below and the evaluation process is summarised in **Table 7-2**.

| Remedial Option                                      | Discussion  |
|--|---|
| Option 1: Do Nothing                                 | This option involves not undertaking any remedial or management measures and proceeding with development.   |
| Option 2: On-site treatment of soil                  | This option includes on-site treatment of soil through physical methods such as sieving and separation, and land farming to stimulate biological degradation and volatilisation of COPCs. Periodic soil sampling is undertaking during the process to determine if the COPCs concentrations have been reduced to levels below the RGs. If present, removal of ACM manually from the surface soils also constitutes on-site treatment of soil. |
|  | This options may also include an in-situ treatment method such as chemical oxidation to change the chemical and/or physical characteristics of the COPCs. Post treatment monitoring is usually required to determine the efficacy of the treatment method.  |
|  | The COPC nickel identified at the Site is not volatile or readily biodegradable and therefore, the identified concentrations cannot be reduced though on-site land farming in a reliable or timely manner.  |
|  | The COPC asbestos (in the form of ACM) can be removed from soils to reduce levels below<br>the RGs through treatment methods such as sieving and separation, given that the site soils<br>are generally sand. Although there is some inherent risk and uncertainty of the success of<br>the method.   |
| Option 3: Off-site<br>treatment of excavated<br>soil | This option includes off-site treatment of soil through physical methods such as sieving and separation, and land farming to stimulate biological degradation and volatilisation of COPCs. Periodic soil sampling is undertaken during the land farming process to determine if COPCs concentrations have been reduced to levels below the RGs. This option is considered when there is not sufficient space on-site to remediate site soils. |
|  | As described above, the identified COPC nickel is not volatile or readily biodegradable and therefore, the identified concentrations, cannot be reduced though off-site land farming in a reliable or timely manner.  |

Table 7-1 Remedial Option Identification

| Remedial Option  | Discussion   |
|--|--|
|  | The COPC asbestos (in the form of ACM) can be removed from soils to reduce levels below<br>the RGs through treatment methods such as sieving and separation, given that the site soils<br>are generally sand. Although there is some inherent risk and uncertainty of the success of<br>the method.  |
| Option 4: Excavation<br>and off-site disposal of<br>impacted soil                      | This option includes the excavation and transportation of soil to an off-site facility licensed to accept the waste. The volume of material is tracked through waste dockets and weight tickets at the receiving facility.   |
|  | This remedial strategy is appropriate to address the identified COPCs at the site in a timely manner and is reliable at removing COPCs from the site at concentrations above the RGs.  |
| Option 5: Isolation and<br>management of the soil<br>on-site by<br>capping/containment | This option includes the encapsulation and/or capping of impacted soils with an appropriately designed cap such as concrete or hardstand. This remedial strategy relies on removing source-pathway-receptor linkage by eliminating the pathway between contamination and receptors and is appropriate for managing the COPCs identified at the site at concentrations above the RGs. |
|  | The site is not expected to require extensive bulk excavation, however some excavation of shallow soils and importation of new topsoil for landscaping is required.  |

Based on the options above, the advantages and disadvantages of each remedial or management option including cost and applicability are compared in compared in **Table 7-2** below.

| Option | Description  | Advantages  | Disadvantages  | Outcome                        |  |
|--------|--|---|--|--------------------------------|--|
| 1      | Do Nothing   | <ul> <li>Elimination of remedial<br/>costs</li> </ul>   | <ul> <li>Does not address the RGs listed in<br/>Section 5, and as such the land<br/>would remain unsuitable for the<br/>proposed use</li> </ul>  | Unsuitable                     |  |
| 2      | On-site<br>treatment of<br>soil (asbestos<br>only)             | <ul> <li>Material is retained<br/>onsite</li> <li>Reduces risk to human<br/>health and the<br/>environment</li> <li>Reduces costs of off-site<br/>disposal</li> <li>Potentially removes<br/>liability for ongoing<br/>management</li> </ul>   | <ul> <li>Only applicable to asbestos impacted soils</li> <li>Costs of the excavation and screening process</li> <li>Inherent risk that soils may not meet validation goals, causing rework</li> <li>Community and stakeholder considerations of working with asbestos on-site.</li> </ul>  | Suitable<br>(asbestos<br>only) |  |
| 3      | Off-site<br>treatment of<br>soil (asbestos<br>only)            | <ul> <li>Material is retained<br/>onsite</li> <li>Reduces risk to human<br/>health and the<br/>environment</li> <li>Reduces costs of off-site<br/>disposal</li> <li>Potentially removes<br/>liability for ongoing<br/>management</li> </ul>   | <ul> <li>Only applicable to asbestos impacted soils</li> <li>Costs of the excavation and screening process</li> <li>Additional transport costs compared to Option 2</li> <li>Inherent risk that soils may not meet validation goals, causing rework</li> </ul>   | Unsuitable                     |  |
| 4      | Excavation<br>and offsite<br>disposal of<br>impacted<br>soils. | <ul> <li>Minimises potential risks<br/>to human health and<br/>environment</li> <li>Economically viable for<br/>smaller, localised areas<br/>of contamination</li> <li>Takes advantage of<br/>excavation required for<br/>construction purposes</li> <li>Suitable long-term<br/>remediation option</li> <li>Removes liability for<br/>ongoing management</li> </ul> | <ul> <li>Costs of offsite disposal at a licensed facility.</li> <li>Potential for larger quantities of material than expected to require disposal.</li> <li>Costs to import soil for construction purposes if required</li> <li>This strategy may require overexcavation and/or require importation of fill following disposal to return the site to its former grade, with associated costs.</li> </ul> | Suitable                       |  |

| 5 | Isolation and<br>management<br>of the soil on-<br>site by<br>containment<br>below a<br>capping layer<br>or hardstand | <ul> <li>Material is retained<br/>onsite</li> <li>Reduces risk to human<br/>health and the<br/>environment</li> <li>Reduces costs of off-site<br/>disposal</li> <li>Reduces need for<br/>additional excavation<br/>works</li> </ul> | <ul> <li>May require over-excavation in order<br/>to place impacted material at depths<br/>below likely disturbance</li> <li>May require stockpiling and extended<br/>periods of work under asbestos<br/>conditions</li> <li>May require ongoing verification that<br/>the remedial strategy is suitable in<br/>the long term through implementation<br/>of a Long Term Environmental</li> </ul> | Suitable |
|---|--|---|--|----------|
|   |  |   | Management Plan  |          |
|   |  |   | <ul> <li>May require a notification on the land<br/>title of the contamination retained on<br/>site.</li> </ul>  |          |

Based on the analysis included in the previous sections, Cardno recommends a combination of Option 4 (excavation and off-site disposal of impacted soils) and Option 5 (isolation of the soil on-site by containment) in order to address the impacts at the Site. These options involve either excavation and removal of asbestos, nickel and hydrocarbon impacted soils, or retention on site beneath an suitable capping layer. These options take advantage of excavation works required for site establishment, and of the capping potential of hardstand proposed for the redevelopment. These remedial options are effective at mitigating human health and ecological receptor pathways at the site by either removing the hazard, or isolating the impacted material.

At the time of this report, the finalised design and business case for implementing each option were pending. As such, Cardno have provided two remedial scenarios incorporating the preferred options above to render the site suitable for the proposed land use. Details of the preferred remediation strategies are provided in **Section 8**.

## 8 Remediation Strategy

As described above, two remedial scenarios incorporating Option 4 and Option 5 are provided in the following sections. Both Remediation Strategy 1 and Remediation Strategy 2 are capable of mitigating or removing potential human health and/or ecological exposure pathways to the asbestos, nickel and hydrocarbon impacts identified, and rendering the site suitable for the proposed land use as a primary school.

Details of the remedial strategies are outlined in the sections below. A Construction and Waste Management Plan is included in **Section 9**. Potential risks to future site workers can be managed through standard WHS practices which are detailed in **Section 10**. The soil validation plan is detailed in **Section 11**.

Should areas of previously unidentified contamination, including asbestos impacted soil, be encountered during the remediation and validation works, additional remedial measures may be required. If encountered, the Unexpected Finds Protocol detailed in **Section 9.6** should be implemented. Details on the requirements during small and larger scale asbestos removal, including WHS measures, are included in **Section 9.4**.

#### 8.1.1 Data Gap Investigation

As described in **Section 4.3**, soils within building footprints have been identified as a Data Gap requiring investigation. This step in the process is applicable to both Remediation Strategy 1 and Remediation Strategy 2.

During the development process, as buildings are demolished and the soils become accessible, a suitably qualified environmental consultant will be engaged to undertake sampling of soils. The number of sampling locations per building footprint will be assessed prior to works, accounting for the previous sampling undertaken during the DSI, the proximity of the sampling points, and the size of the building footprint. It is likely that between one and three sampling points would be required per area. Samples will be submitted to a NATA accredited laboratory for analysis of COPCs relevant to the site use, historical analytical results, and field observations.

During this phase of works, additional sampling and inspection to refine the lateral extent of areas of impact for asbestos and nickel containing soils can also be undertaken. During preparation of the DSI, the extent of impact was estimated as to the nearest sampling point not impacted with COPCs above the adopted screening criteria. Methods such as shallow trenching and step-out sampling in approximately 3 m increments laterally from the sampling point of concern can be undertaken to inform finalised excavation dimensions.

The analytical results of the sampling will be compared to the Tier I Screening Criteria established in the DSI for the site and included within the data tables in **Appendix B**. Any exceedances of the criteria (if detected) will be assessed for significance, and if necessary, any impacts requiring remediation or management will be addressed and added as an addendum to this RAP.

#### 8.1.2 Classification of Soils

An indicative waste classification was completed as part of the DSI for the Site (Cardno 2019a). In order to appropriately manage soils at the site requiring off-site disposal, a formal waste classification for the site should be produced to characterise fill material, and any natural soils requiring excavation and disposal. A review of the data obtained in the DSI should be undertaken and any additional sampling conducted in accordance with NEPM guidance and/or the NSW EPA Excavated Natural Material Order (2014).

#### 8.2 Remediation Strategy 1

Remediation Strategy 1 involves a combination of off-site disposal of soils (Option 4) impacted with asbestos above the HSL and nickel above the EIL, and continued on-site containment (Option 5) of soils impacted with hydrocarbons above the ESL. This approach takes advantage of stripping and removal of shallow soils required for the development in order to remedy the impacts identified.

The remedial approach is to be performed jointly by a suitably qualified environmental consultant, occupational hygienist and a licensed contractor and will involve the following general steps:

- 1. Stripping and excavation of asbestos and nickel impacted soils and disposal off-site at a licenced facility
- 2. Provision of an Asbestos Clearance Certificate for the removal of the asbestos impacted soils
- 3. Collection of soil validation samples from the walls and base of the resulting excavations
- 4. Importation of fill (if required) for landscaping, levelling and geotechnical requirements

5. Visual inspection and validation that hardstand has been restored across the TRH impacted area characterised by BH04

Prior to works commencing, an Asbestos Management Plan / Asbestos Removal Control Plan must be developed by the licensed contractor detailing the proposed works and site specific control measures. All works involving asbestos must be undertaken in accordance with these plans, and the recommendations in **Section 9.4**.

#### 8.2.1 Stripping and Excavation – Asbestos and Nickel Containing Soils

In order to remove the asbestos and nickel impacted soils at the Site, stripping of shallow topsoil and fill for off-site disposal at a licenced facility will be undertaken The general process for the works is as follows:

- 1. Engagement of a licenced asbestos removalist to undertake works involving asbestos removal and remediation
- 2. Preparation of an Asbestos Management Plan / Asbestos Removal Control Plan detailing the removal process and site specific control measures to be implemented;
- 3. Notification to SafeWork NSW of the intention to remove non-friable asbestos
- 4. Provision of Asbestos Air Monitoring (AAM) during disturbance of asbestos containing soils
- 5. Stripping of asbestos impacted topsoil and fill within the eastern area of the site as shown in **Figure 3** in **Appendix A**.
- 6. Provision of an Asbestos Clearance Certificate for site surfaces following works
- 7. Stripping of nickel containing topsoil surrounding TP13 and TP06 to depths of approximately 0.4 mBGL as shown in **Figure 3** in **Appendix A**.
- 8. Importation of certified topsoil for landscaping of proposed areas.

It is estimated that approximately 0.3 to 0.5 m of topsoil and fill will be removed across the majority of the two areas, with localised deeper filling expected at TP03 to 1.2 mBGL. Borehole logs and a geological cross section of the area are provided in **Appendix D**. During the excavation, a suitably qualified environmental consultant should be present to inspect the material excavated and guide the vertical and lateral extent. This process reduces the potential for over- or under-excavation and enables documentation of the works for validation purposes.

#### 8.2.2 Soil Validation Sampling

Once the shallow soils are excavated from the areas of concern, the environmental consultant shall collect validation samples from the walls and base on the resulting excavations. It is anticipated that the validation samples will be collected directly from the exposed soils by a hand protected with a dedicated nitrile glove.

Fill material and topsoil is required to be imported to the site for landscaping, backfill or geotechnical purposes. The material imported should be accompanied by appropriate documentation stating it meets the requirements for use at the Site. Check sampling should be undertaken on imported material to verify its suitability.

Additional details on the soil validation and imported fill sampling plan are included in Section 11.

#### 8.2.3 Visual Validation – Area Surrounding BH04

Following site development works, validation that the soils surrounding BH04 containing hydrocarbons C<sub>16</sub>-C<sub>34</sub> above the adopted ESL remain encapsulated beneath hardstand will be undertaken. The inspection will include a photographic log and as-built plans detailing that hardstand remains over the impacted soils, and that completed receptor pathways from ecological receptors such as vegetation are not present.

#### 8.3 Remediation Strategy 2

Remediation Strategy 2 involves a combination of off-site disposal of soils (Option 4) containing nickel above the EIL, and on-site containment (Option 5) of soils impacted with asbestos above the HSL, and hydrocarbons above the ESL. This approach takes advantage of stripping and removal of shallow soils required for the development, and the use of hardstand areas for capping of soils in order to remedy the impacts identified.

Containment of the asbestos impacted soils would be beneath hardstand paving located around the main school building in the eastern portion of the site. The placement of the material beneath hardstand is subject to its suitability as certified by a qualified geotechnical engineer.

The remedial approach is to be performed jointly by a suitably qualified environmental consultant, occupational hygienist and a licensed contractor and will involve the following general steps:

- 1. Stripping and excavation of nickel impacted soils and disposal off-site at a licenced facility
- 2. Stripping and excavation of asbestos impacted soils and natural soils (if required) and stockpiling onsite
- 3. Disposal of any geotechnically unsuitable material (i.e. topsoil with organic material) off-site to a licenced facility
- 4. Provision of an Asbestos Clearance Certificate for the excavation of the asbestos impacted soils
- 5. Collection of soil validation samples from the walls and base of the resulting excavations
- 6. Emplacement of asbestos containing soils beneath a marker layer, capping layer and hardstand
- 7. Importation of fill (if required) for landscaping, levelling and geotechnical requirements
- 8. Visual inspection and validation that hardstand has been restored across the TRH impacted area characterised by BH04
- 9. Development of a Long Term Environmental Management Plan (LTEMP) to ensure the long term effectiveness of the remedial strategy

#### 8.3.1 Stripping and Excavation – Nickel Containing Soils

In order to remove the nickel impacted soils at the Site, stripping of shallow topsoil and fill surrounding TP06 and TP13 will be undertaken for off-site disposal at a licenced facility. The general process for the works is as follows:

- 1. Stripping of nickel containing topsoil surrounding TP13 and TP06 to depths of approximately 0.4 mBGL as shown in **Figure 3** in **Appendix A**.
- 2. Collection of soil validation samples from the walls and base of the resulting excavations
- 3. Importation of certified topsoil for landscaping of the area

It is estimated that approximately 0.4 m of topsoil and fill will be removed across the majority of the area. Borehole logs are provided in **Appendix D**.

#### 8.3.2 Stripping and Excavation – Asbestos Containing Soils

In order to contain asbestos impacted soils at the site located adjacent the pre-school boundary fence, stripping and stockpiling of the material will be undertaken for site preparation. The general process for the works is as follows:

- 1. Engagement of a licenced asbestos removalist to undertake works involving asbestos removal and remediation
- 2. Preparation of an Asbestos Management Plan / Asbestos Removal Control Plan detailing the removal process and site specific control measures to be implemented;
- 3. Notification to SafeWork NSW of the intention to remove non-friable asbestos
- 4. Provision of Asbestos Air Monitoring (AAM) during disturbance of asbestos containing soils
- 5. Stripping of asbestos impacted topsoil and fill within the eastern area of the site as shown in Figure 3 in Appendix A and stockpiling on-site
- 6. Provision of an Asbestos Clearance Certificate for site surfaces following works

#### 8.3.3 Soil Validation Sampling

Once the shallow soils are excavated from the areas of concern, the environmental consultant shall collect validation samples from the walls and base on the resulting excavations. It is anticipated that the validation samples will be collected directly from the exposed soils by a hand protected with a dedicated nitrile glove.

Fill material and topsoil is required to be imported to the site for landscaping, backfill or geotechnical purposes. The material imported should be accompanied by appropriate documentation stating it meets the requirements for use at the Site. Check sampling should be undertaken on imported material to verify its suitability.

Additional details on the soil validation and imported fill sampling plan are included in Section 11.

#### 8.3.4 On-Site Containment – Asbestos Containing Soils

Following stripping, excavation and site preparation works, the asbestos containing soils are to be placed beneath areas proposed for hardstand capping, namely the hard paving areas surrounding the main school building. Preference can be given to placement in areas required to be raised, such as the south-east corner of the Site adjacent to Jacobson Avenue.

Capping layers shall meet the requirements outlined in the ANZECC (1999) Guidelines for the On-Site Containment of Contaminated Soil. The nominal capping layer requirements include:

- > A marker layer of high visibility geofabric or similar must be placed beneath and above the asbestos containing soils once emplaced, including lining of the side walls
- > A buffer layer of uncontaminated material (such as site soils validated as suitable for re-use, or engineered fill such as DGB) such that the minimum depth between the surface and the contaminated soils is at least 0.3 m
- > An impervious hardstand layer such as concrete, pavement etc.

During and following placement, the base, sides and top of the emplaced soils are to be surveyed and recorded to allow the capping details and location of emplaced soils to be incorporated into a Long Term Environmental Management Plan (LTEMP) and Asbestos Register for the Site.

During emplacement of the soils and construction of the capping layer, regular inspections shall be undertaken to ensure correct capping depths and methods are being followed. Following completion, a validation inspection should be undertaken to ensure the capping layer has been suitably constructed, confirming the isolation of the source from receptors and include a photographic log and as-built plans.

#### 8.3.5 Visual Validation – Area Surrounding BH04

Following site development works, validation that the soils surrounding BH04 containing hydrocarbons  $C_{16}$ - $C_{34}$  above the adopted ESL remain encapsulated beneath hardstand will be undertaken. The inspection will include a photographic log and as-built plans detailing that hardstand remains over the impacted soils, and that completed receptor pathways from ecological receptors such as vegetation are not present.

#### 8.3.6 Long Term Environmental Management Plan

Following completion of site remediation and validation works, a Long Term Environmental Management Plan (LTEMP) would be required to detail the location and nature of the emplaced soils, and the ongoing responsibilities and management requirements for the material. The LTEMP would include strategies to avoid the likelihood of breaching the capping layer, and procedures to be following in the event a breach occurs.

## 9 Construction Environmental and Waste Management Plan

The following sections include a Construction Environmental and Waste Management Plan which provides measures required to minimise the potential impact of works on the local environment, site workers and third parties. In all cases, environmental issues must be managed by the Principal Contractor in accordance with good environmental management practices with periodic supervision and documentation by the appointed environmental consultant. The purpose of these measures is to prevent site workers, the public and environmental exposure to potential health risks associated with these works.

#### 9.1 Stockpile Management

Soil may require temporary stockpiling based on the timing of the construction activities. Soil placed in stockpiles around the site will be tracked according to the location of removal and location of stockpile. Stockpiles in place longer than 24 hours will be placed on an impervious base, compacted and covered with geofabric or similar.

Stockpiles are to be contoured to minimise the loss of material during rainfall, with upstream drainage and levee banks installed to divert water flows around the stockpile. Silt fencing is to be appropriately placed and installed to avoid sediment loading of stormwater drains and pipes. The installation of these controls is to be undertaken in accordance with the Landcom (2004) "Blue Book".

The stockpile(s) should be clearly labelled, with stockpiles containing asbestos materials appropriately identified with warning signage. In the event that larger stockpiles of asbestos, an area can be lined with plastic and used as a stockpiling area. Any stockpiled asbestos contaminated material should be dampened and covered with either geofabric layer or black plastic, which is to be disposed of as asbestos waste after completion of asbestos works.

#### 9.1.1 Waste Tracking

Tracking of waste movements around the site and material transported off-site for disposal is a critical component to demonstrate the remedial strategy is being implemented appropriately. Waste tracking will be achieved through use of waste dockets, survey of stockpiled materials or excavations and photographic documentation of movements of soil around and off-site. An environmental scientist should be on-site to oversee the majority of the remedial works to ensure that appropriate waste tracking procedures are employed.

#### 9.2 Excavation Water Management

It is not anticipated that the water table or dewatering will be required as part of the development. Should any excavations or works accumulate water, or if dewatering is required, water contained or that collects in the soil excavations will be pumped out of the excavation to stormwater/sanitary sewer per Bayside Council disposal requirements. The details of the discharge/disposal requirements of any water that collects in the excavation will require further consideration during the remedial and validation works. Any water intended for disposal (either off-site or to stormwater/sanitary sewer) will require sampling to ensure it meets discharge water quality requirements.

#### 9.3 Air and Dust

#### 9.3.1 Odours

Due to the nature of impact on-site, it is not anticipated that excessive odours will result from remediation works. However, qualified and experienced technical staff will be on site during all excavation works and should excessive odour be generated as a result of the process, on-site spraying of the excavated material with a suitable odour suppressant (ie. Anotec) will be undertaken to minimise any odour. Other options that may also be employed are:

- > A reduction in the size of the excavation face that is open at any one time to reduce the surface area generating the odour;
- Location of any temporary stockpiles of impacted soil as far as possible (and in the predominant down wind direction) from sensitive receptors;
- > Smothering of the odours by covering the portion of the site that is generating the odour; and
- > Watering the stockpiles and excavations to minimise volatile emissions.

During excavation works, a PID and a Lower Explosive Limit (LEL) meter may be used to obtain readings and document VOC concentrations during activities when soil and groundwater are being disturbed.

#### 9.3.2 Dust Control

The Principal contractor will be responsible for ensuring that excavation, loading, carting, and stockpiling operations are dust free. This may include (but is not limited to):

- > Stockpile protection;
- > Water application on stockpiles and access roads;
- > Limiting the area of exposed excavations and surfaces; and
- > Wind fences around earthworks areas.

In the event that excessive dust is generated during any operations on-site, the works will cease and modifications to the process will be made before the operation is resumed. There must be no observable dust transported off-site.

#### 9.4 Removal of Asbestos Waste

Based on results of the DSI, asbestos has been identified at the site requiring remediation or management. The following practices should be followed.

#### 9.4.1 Methodology

Contractors working with asbestos or in asbestos affected areas of the site will be required to prepare and lodge a Safe Work Method Statement and Asbestos Removal Control Plan for the Principal Contractor's approval before commencing work. The chosen remedial contractor will be a certified Asbestos Removal Contractor. A Class B license is required for removal of bonded material and a Class A license for removal of friable asbestos. If the material is in a degraded state, then it would be considered friable by nature and therefore in that circumstance a Class A license contractor would be required. The Department of Education may also stipulate a Class A licensed contractor be employed for all asbestos works in accordance with their over-arching asbestos management procedures.

#### 9.4.2 Stockpiling

If stockpiling of asbestos waste is required, the affected material should be placed on-site in a specified asbestos waste bin, prepared in accordance with referenced codes including:

- > Locate bin on-site, away from adjacent land uses and other contaminated stockpiles, ideally over a concrete or bitumen paved area
- > Bins shall be lined with minimum thickness of 200-micron heavy duty plastic sheet, formed and sealed to ensure leachate from asbestos contaminated material does not escape
- Exposed asbestos waste within the bin shall be lightly wetted regularly to reduce dust generation while loading and prior to plastic encapsulation;
- > Asbestos waste within the waste bin shall be double wrapped in minimum thickness of 200- micron heavy duty plastic sheet or bagged in specific asbestos bags to code requirements;
- > Sandbag or otherwise block any drainage around the waste bin
- > Barricade the perimeter of the stockpiled/waste bin material
- In the event that larger stockpiles of asbestos or asbestos containing soils are required, an area can be lined with plastic and used as a stockpiling area
- > Following removal of stockpiles of asbestos waste, an Asbestos Clearance Certificate for the stockpile area shall be issued by a suitably qualified occupational hygienist.

#### 9.4.3 Decontamination

Adequate decontamination facilities are to be installed onsite in accordance with the guidelines specified in the Code of Practice for the Safe Removal of Asbestos [NOHSC2002 (2005)], Model Code of Practice for How to Safely Remove Asbestos (2018) and the NSW Occupational Health and Safety (Asbestos) Regulations 2003 and amendments

#### 9.4.4 Respiratory Protection

If respirable fibres are identified, persons engaged in the asbestos removal work or accessing a contaminated area shall wear an approved respirator conforming to the requirements of SA/NZS 1715 and 1716.

#### 9.4.5 Warning Notices

Suitable warning signs shall be placed around the works area. These signs shall comply with all relevant acts, regulations and codes of practice, including but not limited to:

- > AS 1319-1983 Dangerous Goods Act 1985;
- > Dangerous Goods (Storage & Handling) Regulations 2000; and
- > Dangerous Goods (Placarding of Workplaces) Regulations 1985.

#### 9.4.6 Loading and Transporting of Asbestos Contaminated Materials (If Required)

If required, asbestos impacted waste is to be removed and disposed of in accordance with all relevant acts, regulations, standards and codes of practice.

Removal of waste materials from the site shall only be carried out by a licensed contractor holding appropriate licenses, consents and approvals from NSW EPA, SafeWork and/or other Authorities to transport and dispose of the asbestos waste materials according to the classification guidelines.

Asbestos waste must be transported in a covered leak-proof vehicle to prevent any spillage or dispersal of waste. Bonded asbestos not stored in a bag must be wetted before it is transported offsite. Asbestos fibres and dust waste are classified as friable and must be covered in a manner to prevent the emission of any dust.

Details of all contaminated materials removal from the site shall be documented with copies of weighbridge slips, trip tickets and consignment disposal confirmation (where appropriate). Such information should be provided to the Site Owner for reporting purposes. A site log shall be maintained by the licensed removal contractor for all waste stockpiles (numbered locations), to enable the tracking of disposed loads against on-site origin and location of the materials.

Measures shall be implemented to ensure no asbestos contaminated material is spilled onto public roadways or tracked off-site on vehicle wheels. Such measures could include the deployment of a vehicle washing/cleaning facility, which should be placed at a location before the site egress. The facility shall be capable of handling all vehicles and plant operating on site. Residue from the cleaning facility will be deemed contaminated unless show by validation to be below Reportable Acceptance Criteria.

The proposed waste transport route should be approved by council. Each load leaving the site shall be recorded. Any vehicle used for the transport of contaminated waste must be inspected before leaving the site to ensure that all residual waste is removed from the outside of the vehicle.

#### 9.4.7 Asbestos Fibre Monitoring

A suitably qualified professional shall carry out appropriate air monitoring of the workplace and surrounding areas during asbestos remediation/removal works in accordance with the Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Dust [NOHSC:3003(1988)] including but not limited to:

- > Air monitoring at the commencement of asbestos removal activity on the site;
- > Air monitoring continuously in areas related to hazard removal work;
- > Air monitoring for clearance following removal of friable asbestos.

Air-monitoring results are to remain below control levels in designated areas and monitored by the environmental consultant / hygienist. These control levels are occupational hygiene best practice and are not health based standards (they are below the concentration set in NES for asbestos). The control levels shall be as per **Table 9-1**:

| Control level (airborne asbestos fibres/ml) | Control / Action                     |
|---|--------------------------------------|
| < 0.01                                      | Continue with control measures       |
| ≥ 0.01                                      | Review control measures              |
| ≥ 0.02                                      | Stop removal work and find the cause |

|  | Table 9-1 | Asbestos Control Levels |
|--|-----------|-------------------------|
|--|-----------|-------------------------|

#### 9.4.8 Clearance Inspections

Following the removal of asbestos-contaminated materials, an inspection must be carried out with the licensed removal contractor, in order to establish areas which may require further remediation. All asbestos waste material must be removed from the work area prior to a clearance inspection.

The environmental consultant/hygienist may terminate the inspection if the work area is deemed to be contaminated and reconvene the inspection after follow-up remediation works to a satisfactory standard.

#### 9.5 Acid Sulfate Soils Management

Potential Acid Sulfate Soils (PASS) have been identified at the site beneath the water table and depths of 7mBGL. Therefore, if ASS are proposed to be disturbed, the procedures outlined in the Acid Sulfate Soils Management Plan (ASSMP) (Cardno 2019b) must be implemented during the remedial and development process.

#### 9.6 Unexpected Finds

In the case that an environmental consultant is not available for oversight, workers will be vigilant for hazardous materials that may be uncovered during excavations. Unexpected finds include, but are not limited to, odour, visual contamination, ASS or PASS, deleterious material inclusions, asbestos containing material, Underground Storage Tanks (USTs) or any other suspect materials. Any unexpected finds will be reported to the Contractor's on-site manager immediately. Additionally, the site owner/occupier should be informed as soon as practical following an unexpected find.

If hazardous materials are uncovered / discovered during excavations the Contractor shall:

- > Cease all work in that vicinity (and fence the area if appropriate)
- > Remove workers from the vicinity
- > An experienced environmental consultant should be contacted to assess the potential risks associated with the Unexpected Finds and provide appropriate management options
- Investigate the nature of the risk of the materials, determine the appropriate response and document the actions in accordance with contractual obligations.

In the event of a serious unexpected find, which could cause harm to human health and/or the environment, the Bayside Council and the NSW EPA may need to be informed.

The risks posed by the removal works to Aboriginal or European heritage are expected to be minimal. However, in the event potential heritage items are encountered during excavations, works will cease and the Site Supervisor notified

#### 9.7 Stormwater

#### 9.7.1 Erosion and Sedimentation Control

Cleared areas and exposed excavations may promote erosion. The following erosion and sediment controls will be implemented:

- > Limiting the extent of cleared areas and exposed excavations
- > Backfilling of excavated areas as soon as practicable
- > Diversion of stormwater from active areas using hay bales or sediment fences
- > Covering of temporary stockpiles with plastic (HDPE) or geofabric and placement of silt socks around excavations when necessary
- > Covering open stormwater grates in the vicinity of stormwater pits and excavations with silt fences or other appropriate materials
- > Placement of stockpiles away from footpaths, roadways, kerbs, access ways or drainage lines
- Minimising translocation of contaminated soils throughout the site by ensuring excavator operators do not track over contaminated areas
- > If possible, a single vehicle entry and exit to minimise translocating soil

> Depending on the volume of soil to be excavated, rumble strips may be required at the site access in order to prevent contaminated soil being transported off-site.

#### 9.7.2 Water Management

Stormwater runoff quality may be adversely affected in the event of rainfall. Hay bales or similar mitigation measures will be placed near down-gradient stormwater entry points to prevent entry of contaminated sediment to stormwater, which may result from the project works.

#### 9.8 Noise

Hours of operation, noise control and noise generating activities will comply with the DA requirements for the project.

#### 9.9 Land Disturbance

Works include excavation, loading, carting and stockpiling operations of associated soils. These works shall be carried out in an orderly manner to minimise impact to the surrounding residences.

- Excavation the removal of soil shall be performed by the appointed excavation contractor using an excavator. If a transport truck is not on-site during excavation and soil will need to be temporarily stockpiled, no contaminated soils should be placed on areas validated as suitable for the proposed land use. In these locations, soil shall be excavated and placed on black plastic liners or on concrete surfaces in discrete stockpiles prior to off-site disposal. Stockpiles should be segregated for each potential contamination source.
- Loading and Carting the loading of the stockpile material shall occur with an appropriately sized machinery. The trucks and trailers shall be covered for transport as deemed necessary, and shall meet any other statutory requirements.

#### 9.10 General

The appointed Principal Contractor shall ensure compliance with relevant SafeWork NSW guidelines and Work Health and Safety Acts and Regulations. The Principal Contractor shall also ensure compliance with any amendments to the Act or Regulations during the project duration.

The Principal Contractor shall monitor and control the access of all persons to the site and ensure that no unauthorised persons enter the site during remedial works (wherever practicable). All site personnel and visitors will be inducted and shall wear appropriate personal protective equipment (PPE).

The appointed Principal Contractor shall undertake additional underground and overhead service location specifically in areas surrounding the remediation location.

Any open excavation(s) are to be barricaded in accordance with the NSW Work Health and Safety Act; Clause 16 (1) and the Construction Safety Regulation Section 73, as administered by SafeWork NSW.

The appointed Principal Contractor shall install warning signs on the barricades surrounding the excavations, including but not limited to: DANGER: OPEN EXCAVATIONS; DANGER: NO SMOKING.

#### 9.10.1 Vehicles

The appointed Principal Contractor shall ensure all vehicles are suitably contained and covered in the transport of all debris, spoil, rubbish and materials to or from the site, such that spillage or contamination of adjoining and other areas or property shall be prevented.

Vehicles shall also be maintained to prevent the transfer of mud or wastes onto adjacent streets or other areas. If wheel treads contain significant quantities of site soils the contractor will manually remove and dispose in stockpiles.

#### 9.10.2 Traffic Control

The Principal Contractor shall supply signs and safety cones; erect at the appropriate entry and exit points; and maintain these devices in good condition. Excavation works, stockpiles and other hazards, shall be individually barricaded at all times. The site will be fully fenced to exclude public.

On-site pedestrian traffic will be averted from the work areas and excavation by means of signage, fencing and safety barricading.

#### 9.10.3 Refuse Disposal

All site refuse, including food, equipment wrappings, unused materials, etc. shall be handled and disposed of appropriately into a skip.

#### 9.10.4 Site Security

The site shall be secured by a lockable fence around the perimeter of the site and access to the site will be restricted. All excavations and above-ground remediation equipment will be barricaded with reflective barricades, with pertinent reflective signage. Keys to the gate will be restricted to approved personnel.

#### 9.10.5 Training

Low environmental awareness of site workers may result in environmental impact including cross contamination of soil layers and off-site movement of contaminated soil. Accordingly, staff awareness training, inductions and daily tool box meetings shall be conducted.

#### 9.10.6 Roles and Responsibilities

#### 9.10.6.1 Client

A summary of the client's role and responsibilities includes:

- > Overall responsibility for the project development and outcomes of the RAP
- > Liaison with neighbours and other stakeholders
- > Engagement of environmental management consultant to oversee implementation of the RAP
- > Engagement of contractors to perform further investigation works, and any subsequent contaminated soil disposal and site rehabilitation works as required
- > Provision of health and safety measures for site personnel and the works area
- > Maintain relevant records associated with the RAP.

#### 9.10.6.2 Principal Contractor

The principal contractor engaged for the management of impacted soils must:

- > Undertake all works in compliance with the provisions of the RAP
- > Liaison with site supervisor regarding progress of works
- > Report any environmental incidents and unexpected finds to the site supervisor
- > Collate all project documentation including landfill disposal dockets (where relevant)
- > Conduct works in accordance with the Site WH&S plan.

#### 9.10.6.3 Site Supervision

A Site Supervisor, who is an experienced environmental scientist familiar with the implementation of environmental controls, will be appointed to take responsibility for implementation of this RAP at the Site during excavation of impacted soils. The Site Supervisor's duties include:

- > Regular inspection of the site and site activities
- > Completion of the daily reporting sheet
- > Provision of on-site advice and direction with regard to implementation and compliance with the RAP
- > Liaison with site personnel/contractors and the client regarding progress of works
- > Provide and maintain a photographic record of works and results
- > Identification, reporting and management of the rectification of any non-conformances with the RAP.

## **10** Work Health and Safety

#### 10.1 WHS Planning and Preparation

Prior to mobilising to complete the remedial works, the Principal Contractor and appointed remedial contractor will develop site and project specific Work Health and Safety Plans (WHSPs), Safe Work Method Statements and Job Safety Analyses for the scope of works to be undertaken. The WHS documentation will detail measures to mitigate potential risks to site workers, third parties and the local environment during the remedial works. General, minimal WHS procedures to be implemented during the remedial works are outlined as follows:

- > The contaminants identified (asbestos) poses potential for exposure via inhalation. Respirators, dust masks and disposable coveralls should be available on site for all works involving asbestos. The additional management practices detailed in **Section 9.4** should also be followed and included in the WHSPs.
- > Potential exposure pathways for contaminants include dermal absorption (skin contact, ingestion) of dust. All workers should wear long sleeve trousers/shirts on-site. Gloves and safety glasses shall be worn by all workers involved in handling of potentially contaminated soils.
- > Protective footwear (steel capped boots) to be worn on site at all times.
- > Hearing protection should be worn during soil removal activities (or when working in the vicinity of heavy plant/machinery).
- > Unauthorised access should be limited by ensuring that security gates are locked at the completion of each day's work.
- Excavations greater than 1.5m depth need to be "stepped" by the appointed civil contractor or otherwise made safe.
- > Personnel are not to enter excavations (>1m depth) at any time.
- > PPE shall be provided in sufficient quantities to provide for the duties of each on-site individual.

#### 10.2 Incident Management Plan

Emergency response includes pre-emergency planning, lines of authority and communication, emergency recognition and prevention, site control, evacuation routes, decontamination and first aid.

#### 10.2.1 Medical Emergency/Serious Injury

In the event of an accident or an emergency situation involving a serious injury or medical emergency, immediate action must be taken by the first person to recognise the event (refer to flowchart below).

A portable and fully-stocked first aid kit shall be retained on site at all times.

In the event of a fatality, the Police, Site Manager, and Project Manager shall be notified immediately.







#### 10.2.2 Fire

In the event of a fire, the actions outlined in below shall be taken:



#### 10.2.3 Environmental Incident

In the event of an environmental incident, the actions outlined below shall be taken:



#### 10.3 Incident Reporting

Cardno employees and sub-contractors are required to verbally report incidents, accidents and near-misses to the Project Manager immediately after an event has occurred. It is the responsibility of the Project Manger to notify the Client Representative immediately after the occurrence of an environmental incident and to forward the completed a written incident report within 24 hours. Additional investigations may be necessary should a serious incident occur.

#### **10.4 Community Consultation**

Cardno anticipates that community consultation will be required during the course of the remedial and validation works. Unless incorporated into other management documents, a detailed Community Consultation Plan may be developed to manage communications with third parties.

## **11** Sit Validation Requirements

During and after the remedial works are complete, additional soil samples will be required to:

- > Validate the material proposed for re-use on-site is suitable for the proposed land use as a primary school
- > Validate that soil remaining in place at the site is suitable for the proposed land use as a primary school
- > Validate that on-site containment measures have been implemented appropriately (as required)
- > Validate any imported soil is suitable for the proposed mixed commercial land use and is not a potential source of contamination.

#### 11.1 Visual Inspection and Survey

Following excavation of asbestos impacted soils, and capping layer construction (if Remediation Option 2 is selected) a validation clearance inspection should be undertaken by a suitably qualified occupational hygienist to ensure asbestos containing materials have been removed from areas where impacted fill was required to be excavated. Areas of the Site in which asbestos materials and / or hydrocarbon containing soils have been capped should be inspected by a suitably qualified environmental consultant and validated to ensure adequate capping has been implemented. Initial survey followed by periodic inspections during the capping construction shall be undertaken to ensure recommended capping thicknesses are achieved and the Remedial Objectives for this project have been meet.

#### 11.2 Post Excavation Validation Sampling

After soil is excavated from the area characterise by TP06 and TP13, and in asbestos impacted adjacent the eastern boundary, soil samples from the base and walls of the resulting excavation will be collected to validate the soil remaining on-site. The recommended density for collection of validation soil samples is 1 sample per 10 linear metres of sidewall and 1 sample per 100 m<sup>2</sup> of excavation base. However, this density should be doubled when asbestos has been identified as a COPC based on requirements in the NEPM.

Therefore:

- > A minimum of one validation soil sample will be collected per 5 linear metres of sidewall and 50 m<sup>2</sup> of excavation base area for asbestos analysis in the east of the site;
- > A minimum of one validation soil sample will be collected per 10 linear metres of sidewall and 100 m<sup>2</sup> of excavation base area for analysis of nickel in the area surrounding TP06 and TP13.

The post excavation soil samples will be analysed for the same parameters as listed in **Section 12.1**. If the analytical results meet the RGs detailed in **Section 6**, the soil will be deemed suitable to remain in place under the proposed land use as a primary school.

#### 11.3 Soil Re-Use Validation

If soils are required to be excavated and re-used on site for backfill or construction purposes, a review of data obtained during the DSI should be undertaken and, if necessary, additional soil samples collected by a suitably qualified environmental consultant. The target sample density for soil intended for re-use is 1 sample per 25 m<sup>3</sup> in accordance with NEPM guidance. The additional soil samples should be analysed by a NATA accredited laboratory for COPCs including (but not limited to) the following:

- > Total Recoverable Hydrocarbons (TRH);
- > Benzene, toluene, ethylbenzene, xylenes, naphthalene (BTEXN)
- Polycyclic aromatic hydrocarbons (PAHs)
- > Eight metals (As, Cd, Cr, Cu, Ni, Pb, Zn and Hg)
- > Quantitative Asbestos per NEPM.

If the soil analytical results of the additional sampling meet the NEPM Tier I screening guidelines for the proposed land use as a primary school, the soil will be deemed suitable for re-use on-site as fill.

#### 11.4 Excavated Natural Material Sampling

As stated previously, excavation of natural soils for site development will be required and potentially disposed of off-site. There is no indication that the natural soils at the site above the water table are impacted with measurable COPCs and it is possible that they can be classified as ENM.

Soil samples of the natural material will be collected across the proposed excavation footprint. Soil samples will be collected in accordance with the sampling densities outlined in Tables 2 and 3 of the ENM Order for analysis of COPCs and other physical attributes listed in Table 4 in the ENM Order. These parameters include:

- > TPH/TRH C10 to C36;
- > BTEX;
- > Total PAHs;
- > The metals Hg, Cd, Pb, As, Total Cr, Ni and Zn;
- > Physical parameters including pH, electrical conductivity, and foreign material inclusions

#### 11.5 Imported Fill Sampling

Any soil imported to the Site, other than engineered materials, should be sampled to determine its suitability for the proposed land use. If imported fill material is accompanied by a VENM or ENM certificate, one sample per 1,000 m<sup>3</sup> should be collected. If imported fill material is not accompanied by a VENM or ENM certificate, one sample per 250 m<sup>3</sup> should be collected. Imported fill samples should be analysed for the COPCs and analytical methods including:

- > Total Petroleum/Recoverable Hydrocarbons (TRH);
- > Benzene, Toluene, Ethylbenzene, Total Xylenes and Naphthalene (BTEXN);
- > Polycyclic Aromatic Hydrocarbons (PAHs);
- > Heavy Metals (Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc);
- > Asbestos (weight/weight %)
- > pH, EC and foreign materials

## 12 Contingency Plan

As with any remedial scope of work, unanticipated events or outcomes may be encountered during the remedial program. Cardno has developed contingencies throughout the RAP to mitigate risks associated with potential issues that may arise during the remedial works. Contingency items considered for the current remediation are summarised in **Table 12-1** noting that there may be other unforeseen circumstances that may arise during the course of the works.

| Table 12-1 | <b>Remedial Works</b> | Contingency Plan |
|------------|-----------------------|------------------|
|            |                       | 0 ,              |

| Potential Issue  | Contingency Measure  |
|--|--|
| Evidence of additional<br>contamination not<br>previously identified     | Further assessment involving intrusive investigations or remediation may be required to quantify and delineate potential contamination.  |
| Greater than anticipated volumes of soil require management              | The proposed remedial strategy is scalable in that additional soil can be excavated.   |
|  | Off-site soil disposal is scalable for if large, unexpected volumes of soil are produced.  |
|  | In the case of additional contaminated soil being identified and on-site containment is feasible, excess natural soils may meet the definition of Excavated Natural Material for beneficial re-use off-site, and retention of impacted soils at the site.            |
| Unintentional release of stockpiled soil or water drained from stockpile | Construction of appropriate erosion and sedimentation controls around stockpiles   |
|  | Spill equipment will be staged on-site during the remedial works.  |
|  | Weather forecasts will be monitored throughout the course of the remedial works to anticipate any significant storm events. Works may be suspended if large volumes of rain are anticipated. Soil stockpiles would be sufficiently covered prior to any storm event. |
| Water ingress to<br>excavation is<br>unmanageable                        | Consider aggressive means to remove the water (multiple vacuum trucks) or below ground dewatering equipment.   |
|  | Consider installation of a physical barrier to block the water ingress.  |

## 13 Regulatory Approvals / Licences

#### 13.1 Regulatory Compliance Requirements

Regulations and sources of regulatory guidance relevant to this remediation programme relate to waste management, environment protection and occupational health and safety.

#### 13.1.1 Waste Management

The remediation program must comply with the following legislation and policies

- > Waste Avoidance and Resource Recovery Act 2001.
- > Protection of the Environment Operations (Waste) Regulation 2005.
- > NSW EPA (2014) Waste Classification Guidelines.

#### 13.1.2 Environmental Protection

The remediation of asbestos impacted soils must be carried out in a manner compliant with national, state and local environmental regulations, including the

- > Protection of the Environment Operations Act 1997.
- > State Environmental Planning Policy (SEPP) 55 Remediation of Land;
  - Given the minor nature of remediation work proposed to be undertaken at the Site, the works are considered to be Category 2 remediation work – work not needing consent. Whilst consent is not required, Clause 16 of SEPP 55 requires Council to be notified in writing at least 30 days before the commencement of work, and supply a Site Validation Report within 30 days of completion of works.
- > Contaminated Land Management Act 1997
- National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).

## 14 Conclusions

Cardno was engaged by DWP to prepare a RAP to guide and inform the remediation of soils at Kyeemagh Infants School, corner of Jacobson Avenue and Beehag Street, Kyeemagh NSW. The Site is proposed to be redeveloped from its current configuration as an infants school into a K-6 capable primary school.

The Site is located on a parcel of land that has been in use as a school since 1942. The DSI conducted by Cardno in 2018/19 identified areas of COPCs within soils requiring remediation or management. The identified areas of concern were an area of asbestos impacted soils above the adopted NEPM HSL in the east of the site, an area of nickel impacted topsoil above the site specific EIL in the northern area of the site, and an area of TRH  $C_{16}$ - $C_{34}$  impacted soil above the adopted ESL beneath hardstand in the south west.

The objectives of the RAP are to define the soil remediation and validation requirements for the previously identified asbestos, nickel and TRH impacts at the Site. Additionally, the remedial strategies are designed to minimise the potential risks to human health and the environment relative to the proposed land use of the property as a primary school.

Cardno evaluated potentially applicable remedial alternatives to address the potential risks to human health and the environment. Due to the finalised design and business case for each option being pending at the time of this report, two remedial strategies are provided which will eliminate receptor pathways to the identified COPCs at the site. The recommended strategies involve a combination of off-site disposal of impacted soil, and on-site containment beneath hardstand. These strategies provide the most efficient option for remediating the site, taking advantage of soil removal required for construction purposes and the capping potential of hardstand for the new development.

The remedial strategies are to be performed jointly by an environmental consultant, occupational hygienist and a licensed contractor and will involve the following general steps:

**Remediation Strategy 1:** 

- 1. Stripping and excavation of asbestos and nickel impacted soils and disposal off-site at a licenced facility
- 2. Provision of an Asbestos Clearance Certificate for the removal of the asbestos impacted soils
- 3. Collection of soil validation samples from the walls and base of the resulting excavations
- 4. Importation of fill (if required) for landscaping, levelling and geotechnical requirements
- 5. Visual inspection and validation that hardstand has been restored across the TRH impacted area characterised by BH04.

**Remediation Strategy 2** 

- 1. Stripping and excavation of nickel impacted soils and disposal off-site at a licenced facility
- 2. Stripping and excavation of asbestos impacted soils and natural soils (if required) and stockpiling onsite
- 3. Disposal of any geotechnically unsuitable material (i.e. topsoil with organic material) off-site to a licenced facility
- 4. Provision of an Asbestos Clearance Certificate for the excavation of the asbestos impacted soils
- 5. Collection of soil validation samples from the walls and base of the resulting excavations
- 6. Emplacement of asbestos containing soils beneath a marker layer, capping layer and hardstand
- 7. Importation of fill (if required) for landscaping, levelling and geotechnical requirements
- 8. Visual inspection and validation that hardstand has been restored across the TRH impacted area characterised by BH04
- 9. Development of a Long Term Environmental Management Plan (LTEMP) to ensure the long term effectiveness of the remedial strategy

This RAP also includes a Construction Environmental and Waste Management Plan, a Work Health and Safety Plan and a Contingency Plan in addition to waste classification and soil validation requirements.

## 15 References

Cardno (2018) Kyeemagh Public School - Flooding Advice, letter dated 31 October 2018.

Cardno (Cardno, 2019a) Detailed Site Investigation – Kyeemagh Infants School, Corner of Jacobson Avenue and Beehag Street, Kyeemagh NSW, prepared for DWP Australia, January 2019

Cardno (2019b) Acid Sulfate Soils Management Plan - Kyeemagh Infants School, Corner of Jacobson Avenue and Beehag Street, Kyeemagh NSW, prepared for DWP Australia, January 2019

Parsons Brinckerhoff (PB, 2014a) Asbestos Remediation Clearance Certificate. Prepared 9 July 2014.

Parsons Brinckerhoff (PB, 2014b) Asbestos in Grounds, Asbestos Management Plan, Kyeemagh Infants School, Kyeemagh, NSW. Prepared July 2014.

DECC (2009) Contaminated Sites: Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997. Department of Environment and Climate Change NSW, Sydney. June 2009.

NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure (NEPM). National Environment Protection Council (NEPC) 1999, Amendment 2013;

NEPC (2013) Schedule B(2) Guideline on Site Characterisation, NEPM 1999, Amendment 2013;

NSW Department of Urban Affairs and Planning (1998) *Managing Land Contamination: Planning Guidelines: SEPP 55 Remediation of Land*, 1998;

NSW OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites*. New South Wales Office of Environment a& Heritage (OEH), November 1997, Reprinted September 2000, Reprinted August 2011;

Parsons Brinckerhoff (PB, 2014a) Asbestos Remediation Clearance Certificate. Prepared 9 July 2014.

Parsons Brinckerhoff (PB, 2014b) Asbestos in Grounds, Asbestos Management Plan, Kyeemagh Infants School, Kyeemagh, NSW. Prepared July 2014.

Standards Australia (2005) Australian Standard AS 4482.1-2005 – Guide to the investigation and sampling of sites with potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds. Standards Australia, Homebush, NSW; and

Standards Australia (1999) Australian Standard AS 4482.2-1999 - Guide to the sampling and investigation of potentially contaminated soil. Part 2: Volatile substances. Standards Australia, Homebush, NSW.

## 16 Limitations

This report has been prepared for the client, and their agents and the local council planning authority for the purpose of guiding and informing the remediation programme. Use of the report by other parties for different purposes shall be at their own risk. Whilst the assessment has used current industry practice to characterise the nature and extent of contamination at this site, and the author is satisfied with the quantity and quality of the information presented as the basis for this report, the Cardno cannot guarantee completeness or accuracy of any data, descriptions or conclusions based on information provided to it by others.

The agreed scope of this assessment has been limited for the current purposes of the Client. The remedial approach presented in this RAP may not remediate all types of contamination occurring in all areas of the site.

This Document has been provided by Cardno subject to the following limitations:

- > This Document has been prepared for the particular purpose outlined in Cardno's proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose;
- > The scope and the period of Cardno's services are as described in Cardno's proposal, and are subject to restrictions and limitations. Cardno did not perform a complete assessment of all possible conditions or circumstances that may exist at the site;
- Conditions may exist which may limit the effectiveness of the proposed remedial approach, including geologic and hydrologic conditions, the presences of services or other underground infrastructure. Accordingly, more than one phase of remediation may be required to achieve the goals of this RAP;
- In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Cardno's opinions are based upon information that existed at the time of the production of the Document. It is understood that the services provided allowed Cardno to form no more than an opinion of the actual conditions of the site at the time this Document was prepared and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.
- Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Cardno for incomplete or inaccurate data supplied by others.
- Cardno may have retained sub consultants affiliated with Cardno to provide services for the benefit of Cardno. To the maximum extent allowed by law, the Client acknowledges and agrees it will not have any direct legal recourse to, and waives any claim, demand, or cause of action against, Cardno's affiliated companies, and their employees, officers and directors.

This RAP is not any of the following:

- > A Site Audit Report or Site Audit Statement as defined under the Contaminated Land Management Act, 1997
- > A Detailed ESA or Environmental Site Investigation sufficient for an Environmental Auditor to be able to conclude a Site Audit Report and Site Audit Statement
- > A detailed hydrogeological assessment in conformance with NSW DEC (2007) Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination
- > An assessment of groundwater contaminants potentially arising from other sites or sources nearby

A total assessment of the site to determine suitability of the entire parcel of land at the site for one or more beneficial uses of land.



## FIGURES







# Kyeemagh **Infants School**

INTRUSIVE LOCATIONS

Coordinate System: GDA 1994 MGA Zone 56 Map: 80818157-GS-002-SitePlan.mxd 01





# APPENDIX



## SITE PHOTOGRAPHS





**Photograph 1:** Site view, facing west from Jacobson avenue boundary, showing grassed open playing area and school infrastructure.



Photograph 2: Site view of school infrastructure, hardstand and BH04 location, facing east.


**Photograph 3**: Site view towards BH02 location showing the north site boundary abutting residential properties, the pre-school area, and access gate to Tancred Avenue.



Photograph 4: Clad buildings adjacent to Jacobson Avenue with potential ACM wall linings.





**Photograph 5**: TP12 location showing shallow fill and topsoil profile over sands within the open grassed area.



Photograph 6: TP10 location showing shallow topsoil profile over sands adjacent Jacobson Avenue.



**Photograph 7**: ABS2 location adjacent TP19 showing representative fibre cement fragments containing chrysotile asbestos at the soil surface.

### APPENDIX



### ANALYTICAL SUMMARY TABLES





|   |         |         |              | BTEX           |            |              |            |         |           | TRH       |         |                           |
|---|---------|---------|--------------|----------------|------------|--------------|------------|---------|-----------|-----------|---------|---------------------------|
|   | Benzene | Toluene | Ethylbenzene | Xylene (m & p) | Xylene (o) | Xylene Total | Total BTEX | C6 - C9 | C10 - C14 | C15 - C28 | C29-C36 | +C10 - C36 (Sum of total) |
|   | mg/kg   | mg/kg   | mg/kg        | mg/kg          | mg/kg      | mg/kg        | mg/kg      | mg/kg   | mg/kg     | mg/kg     | mg/kg   | mg/kg                     |
|   | 0.1     | 0.1     | 0.1          | 0.2            | 0.1        | 0.3          | 0.2        | 20      | 20        | 50        | 50      | 50                        |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |         |         |              |                |            | 105          |            |         | 100       |           |         |                           |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     | 50      | 85      | 70           |                |            | 105          |            |         | 120       |           |         |                           |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m | 1100    | 120,000 | 85,000       |                |            | 130,000      |            |         |           |           |         |                           |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |         |         |              |                |            |              |            |         |           |           |         |                           |
| NEPM 2013 HIL, Residential A  |         |         |              |                |            |              |            |         |           |           |         |                           |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |         |         |              |                |            |              |            |         |           |           |         |                           |
| 0-1m  | 0.5     | 160     | 55           |                |            | 40           |            |         |           |           |         |                           |
| 1-2m  | 0.5     | 220     | NL           |                |            | 60           |            |         |           |           |         |                           |
| 2-4m  | 0.5     | 310     | NL           |                |            | 95           |            |         |           |           |         |                           |
| >4m   | 0.5     | 540     | NL           |                |            | 170          |            |         |           |           |         |                           |

| Site | Location | Field ID | Sample Date |       |      |       |      |      |      |   |     |     |     |     |     |
|------|----------|----------|-------------|-------|------|-------|------|------|------|---|-----|-----|-----|-----|-----|
|      |          | TP01_0.2 |             | <0.1  | <0.1 | <0.1  | <0.2 | <0.1 | <0.3 | - | <20 | <20 | <50 | 62  | 62  |
|      |          | TP01_0.9 |             | <0.1  | <0.1 | <0.1  | <0.2 | <0.1 | <0.3 | - | <20 | <20 | <50 | <50 | <50 |
|      |          | TP02_0.1 |             | <0.1  | <0.1 | <0.1  | <0.2 | <0.1 | <0.3 | - | <20 | <20 | 63  | 110 | 173 |
|      |          | TP02_0.4 |             | <0.1  | <0.1 | <0.1  | <0.2 | <0.1 | <0.3 | - | <20 | <20 | <50 | <50 | <50 |
|      |          | TP03_0.2 |             | <0.1  | <0.1 | <0.1  | <0.2 | <0.1 | <0.3 | - | <20 | <20 | <50 | <50 | <50 |
|      |          | TP03_1.2 |             | < 0.1 | <0.1 | < 0.1 | <0.2 | <0.1 | <0.3 | - | <20 | <20 | <50 | <50 | <50 |

|                         |                                      |  |            |      |      |      |      |      |      |      |     |     |      | <u> </u> |      |
|-------------------------|--------------------------------------|--|------------|------|------|------|------|------|------|------|-----|-----|------|----------|------|
|                         | TP                                   | 04_0.1   | ]          | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TF                                   | 05_0.1   | ]          | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TF                                   | 05_0.9   | ]          | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TF                                   | 06_0.1   | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | 100  | 480      | 580  |
|                         | TF                                   | 06_0.3   | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TF                                   | 07_0.1   | ]          | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TF                                   | 07_0.4   | ]          | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TF                                   | 07_0.6   | ]          | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TF                                   | 08_0.4   | ]          | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TF                                   | 09_0.3   | ]          | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TF                                   | 210_0.1  | ]          | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | 91       | 91   |
|                         | TF                                   | 211_0.2  |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TF                                   | 211_1.2  | ]          | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | 72   | 92       | 164  |
|                         | TF                                   | 212_0.2  | ]          | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TF                                   | 213_0.1  |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | 70   | 290      | 360  |
|                         | TF                                   | 213_0.4  | ]          | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -        | -    |
|                         | TF                                   | 214_0.1  | ]          | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -        | -    |
| Kyeemagh Infants School | TF                                   | 14_0.7   | ]          | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TF                                   | P15_0.1<br>P15_0.6   | ]          | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TF                                   | 215_0.6  | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TP                                   | TP15_0.6<br>TP16_0.1<br>TP16_0.8   | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TP                                   |  | ]          | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TP                                   | 17_0.1   |            | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -        | -    |
|                         | TP                                   | 17_0.5   |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TP                                   | 218_0.1  |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TP                                   | 218_0.4  |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TP                                   | 219_0.1  | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TP                                   | 219_0.3  | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TP                                   | 20_0.1   |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | BH                                   | 102_0.5  | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | В                                    | H2_1.0   | 17711/2010 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | BH                                   | 103_0.5  |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | B                                    | H4_0.4   |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | 370  | 1600     | 1970 |
|                         | BH4_0.4<br>BH05_0.2-0.5<br>TP03_ASB1 | 10/11/2018   | <0.1       | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20  | <20 | <50 | <50  | <50      |      |
|                         |                                      | 10/11/2018   | -          | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -        |      |
|                         | TP                                   | TP04_0.4       ASB2       TP12_0.2     QA100       TP12_0.2     QA200       TP16_0.1     QA300 |            | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -        | -    |
|                         |                                      |  | 17/11/2018 | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -        | -    |
|                         | TP12_0.2                             |  | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TP12_0.2                             |  | 10/11/2010 | <0.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.2 | <10 | <50 | <100 | <100     | <50  |
|                         | TP16_0.1                             |  | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50      | <50  |
|                         | TP16_0.1                             | QA400  | 1,711,2010 | <0.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.2 | <10 | <50 | <100 | <100     | <50  |

| Maximum Concentration | <0.2  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.2 | <20 | <50 | 370 | 1600 | 1970 |
|-----------------------|-------|-------|-------|-------|-------|-------|------|-----|-----|-----|------|------|
| Average Concentration | 0.052 | 0.06  | 0.06  | 0.11  | 0.06  | 0.15  | <0.2 | <20 | <50 | 40  | 88   | 104  |
| Standard Deviation    | 0.011 | 0.044 | 0.044 | 0.033 | 0.044 | 0.022 |      | 1   | 3   | 55  | 256  | 316  |



|   |        |         | CRC Care        | TRH Fract | ions                     |                      |                               |           |                        |                        |                  | M              | ۹H              |                    |                  |         |                   |
|---|--------|---------|-----------------|-----------|--------------------------|----------------------|-------------------------------|-----------|------------------------|------------------------|------------------|----------------|-----------------|--------------------|------------------|---------|-------------------|
|   | C6-C10 | C10-C16 | C16-C34         | C34-C40   | C10 - C40 (Sum of total) | F1: C6-C10 less BTEX | F2: >C10-C16 less Naphthalene | Total MAH | 1,2,4-trimethylbenzene | 1,3,5-trimethylbenzene | lsopropylbenzene | n-butylbenzene | n-propylbenzene | p-isopropyltoluene | sec-butylbenzene | Styrene | tert-butylbenzene |
|   | mg/kg  | mg/kg   | mg/kg           | mg/kg     | mg/kg                    | mg/kg                | mg/kg                         | mg/kg     | mg/kg                  | mg/kg                  | mg/kg            | mg/kg          | mg/kg           | mg/kg              | mg/kg            | mg/kg   | mg/kg             |
| LOR   | 20     | 50      | 100             | 100       | 100                      | 20                   | 50                            | 0.5       | 0.5                    | 0.5                    | 0.5              | 0.5            | 0.5             | 0.5                | 0.5              | 0.5     | 0.5               |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |        |         |                 |           |                          |                      |                               |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |        | 120     | 300             | 2800      |                          | 180                  |                               |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m | 82,000 | 62,000  | 85 <i>,</i> 000 | 120,000   |                          |                      |                               |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |        |         |                 |           |                          |                      |                               |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| NEPM 2013 HIL, Residential A  |        |         |                 |           |                          |                      |                               |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |        |         |                 |           |                          |                      |                               |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| 0-1m  |        |         |                 |           |                          | 45                   | 110                           |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| 1-2m  |        |         |                 |           |                          | 70                   | 240                           |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| 2-4m  |        |         |                 |           |                          | 110                  | 440                           |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| >4m   |        |         |                 |           |                          | 200                  | NL                            |           |                        |                        |                  |                |                 |                    |                  |         |                   |

| Site                    | Location                         | Field ID            | Sample Date  |          |             |      |      |      |     |             |             |             |             |             |             |             |             |             |      |            |
|-------------------------|----------------------------------|---------------------|--------------|----------|-------------|------|------|------|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------|------------|
|                         | TF                               | P01_0.2             |              | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | - 1        |
|                         | TF                               | P01_0.9             |              | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | TF                               | P02 0.1             |              | <20      | <50         | 130  | <100 | 130  | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | TF                               | P02 0.4             | -            | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | TF                               | <br>203_0.2         | 1            | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | TF                               | <br>203_1.2         | 1            | <20      | <50         | <100 | <100 | <100 | <20 | <50         | <0.5        | <0.5        | <0.5        | <0.5        | -           | -           | -           | -           | <0.5 | -          |
|                         | TF                               | P04 0.1             | 1            | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | TF                               | P05_0.1             | 1            | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | TF                               | 205 0.9             | -            | <20      | <50         | <100 | <100 | <100 | <20 | <50         | <0.5        | <0.5        | <0.5        | <0.5        | -           | -           | -           | -           | <0.5 | -          |
|                         | TF                               | 206_0.1             | -            | <20      | <50         | 350  | 520  | 870  | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         |                                  | 206.03              | 10/11/2018   | <20      | <50         | <100 | <100 | <100 | <20 | <50         | <0.5        | <0.5        | <0.5        | <0.5        | -           | -           | -           | -           | <0.5 | -          |
|                         | Т                                | 207_0.1             | -            | <20      | <50         | <100 | <100 | <100 | <20 | <50         |             |             | -           | -           |             | -           | -           | -           | <0.5 |            |
|                         | Т                                | 07_0.1              | -            | <20      | <50         | <100 | <100 | <100 | <20 | <50         |             |             | _           |             |             | _           | -           |             |      | _          |
|                         |                                  | 07_0.4              | -            | <20      | <50         | <100 | <100 | <100 | <20 | <50         |             | -           | -           | -           | -           | -           | -           | -           |      | _ <u> </u> |
|                         |                                  | 07_0.0              | -            | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           |      |            |
|                         |                                  | 200_0.4             | -            | <20      | <50         | <100 | <100 | <100 | <20 | <50         | <0.5        | <0.5        | <0.5        | <0.5        | -           | -           | -           | -           | <0.5 |            |
|                         |                                  | <sup>2</sup> 09_0.3 | -            | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           |      | -          |
|                         |                                  | <sup>2</sup> 10_0.1 | -            | <20      | <50         | <100 | 150  | 150  | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           |      | -          |
|                         | 11                               | 211_0.2             | -            | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | TF                               | 211_1.2             | -            | <20      | <50         | <100 | <100 | <100 | <20 | <50         | <0.5        | <0.5        | <0.5        | <0.5        | -           | -           | -           | -           | <0.5 | -          |
|                         | TP12_0.2<br>TP13_0.1<br>TP13_0.4 | P12_0.2             |              | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | TF                               | P13_0.1             | _            | <20      | <50         | 270  | 240  | 510  | <20 | <50         | <0.5        | <0.5        | <0.5        | <0.5        | -           | -           | -           | -           | <0.5 |            |
|                         | TF                               | P13_0.4             |              | -        | -           | -    | -    | -    | -   | -           | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | TF                               | P14_0.1             |              | -        | -           | -    | -    | -    | -   | -           | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
| Kyeemagh Infants School | AT                               | P14_0.7             |              | <20      | <50         | <100 | <100 | <100 | <20 | <50         | <0.5        | <0.5        | <0.5        | <0.5        | -           | -           | -           | -           | <0.5 | -          |
|                         | TF                               | P15_0.1             |              | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | TF                               | P15_0.6             | 17/11/2018   | <20      | <50         | <100 | <100 | <100 | <20 | <50         | <0.5        | <0.5        | <0.5        | <0.5        | -           | -           | -           | -           | <0.5 | -          |
|                         | TF                               | P16_0.1             | 1//11/2018   | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | TF                               | P16_0.8             | ]            | <20      | <50         | <100 | <100 | <100 | <20 | <50         | <0.5        | <0.5        | <0.5        | <0.5        | -           | -           | -           | -           | <0.5 | -          |
|                         | TF                               | P17_0.1             | ]            | -        | -           | -    | -    | -    | -   | -           | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | TF                               | P17_0.5             |              | <20      | <50         | <100 | <100 | <100 | <20 | <50         | <0.5        | <0.5        | <0.5        | <0.5        | -           | -           | -           | -           | <0.5 | -          |
|                         | TF                               | P18_0.1             |              | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | TF                               | P18_0.4             |              | <20      | <50         | <100 | <100 | <100 | <20 | <50         | <0.5        | <0.5        | <0.5        | <0.5        | -           | -           | -           | -           | <0.5 | -          |
|                         | TF                               | P19_0.1             | 10/11/2010   | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | TF                               | P19 0.3             | 10/11/2018   | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | TF                               | P20 0.1             |              | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | BF                               | <br>102             | 1 .= // /==  | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | В                                | <br>H2 1.0          | 17/11/2018   | <20      | <50         | <100 | <100 | <100 | <20 | <50         | <0.5        | <0.5        | <0.5        | <0.5        | -           | -           | -           | -           | <0.5 | -          |
|                         | BF                               | 103 0.5             | 1            | <20      | <50         | <100 | <100 | <100 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | В                                | H4 0.4              |              | <20      | <50         | 1200 | 940  | 2140 | <20 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         | BHO                              | 5 0.2-0.5           | 1            | <20      | <50         | <100 | <100 | <100 | <20 | <50         | <0.5        | <0.5        | <0.5        | <0.5        | -           | -           | -           | -           | <0.5 | -          |
|                         | TP                               | 03 ASB1             | 10/11/2018   | -        | -           | -    | -    | -    | -   | -           | -           | -           | -           | -           | -           | -           | -           | -           | -    | -          |
|                         |                                  | 204 0 4             | -            |          | -           | -    | -    | -    | -   | -           |             | -           | -           | -           | -           | -           | -           | -           |      |            |
|                         |                                  | ΔSR2                | 17/11/2018   | <u> </u> | _           |      | _    |      |     |             |             |             |             |             |             |             |             |             |      |            |
|                         |                                  | Δ100                | 1//11/2010   | <20      | -           | -    | -    | -    |     | -           | -           | -           | -           | -           | -           | -           | -           | _           | -    |            |
|                         | TD12 0.2                         | 04300               | - 10/11/2018 | <10      | < <u>50</u> | <100 | <100 | ~=0  | <10 | < <u>50</u> | <u>\0.5</u> | <0.5        | <0.5        | <0.5        |             | -           |             | -05         |      |            |
|                         | TD16 0 1                         |                     |              | <20      | < <u>50</u> | <100 | <100 | <100 | <20 | < <u>50</u> |             | <u>\0.5</u> | <u>\0.5</u> | <u>\0.5</u> | <u>\0.5</u> | <u>\0.5</u> | <u>\0.5</u> | <u>\U.5</u> | ~0.5 | ~0.5       |
|                         | TD16_0.1                         |                     | 17/11/2018   | <20      | <50         | <100 | <100 | <100 | <20 | <u> </u>    | -           | -           | -           | -           | -           | -           | -           | -           |      |            |
|                         | 1610-01                          | UA400               | 1            | <10      | <50         | <100 | <100 | <50  | <10 | <50         | -           | -           | -           | -           | -           | -           | -           | -           | J    |            |

| Maximum Concentration | <20 | <50 | 1200 | 940 | 2140 | <20 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|-----------------------|-----|-----|------|-----|------|-----|-----|------|------|------|------|------|------|------|------|------|------|
| Average Concentration | <20 | <50 | 93   | 90  | 135  | <20 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Standard Deviation    | 1   | 0   | 187  | 158 | 353  | 1   | 0   | 0    | 0    | 0    | 0    |      |      |      |      | 0    |      |



|   |                                |                                    |                        |              |                |              |                   |                |                | P                      | AH                   |          |                       |              |          |                          |             |                     |              |        |
|---|--------------------------------|------------------------------------|------------------------|--------------|----------------|--------------|-------------------|----------------|----------------|------------------------|----------------------|----------|-----------------------|--------------|----------|--------------------------|-------------|---------------------|--------------|--------|
|   | Benzo(a)pyrene TEQ (half LOR)_ | Benzo(a)pyrene TEQ (upper bound) * | Benzo(b+j)fluoranthene | Acenaphthene | Acenaphthylene | Anthracene   | Benz(a)anthracene | BaP TEQ (zero) | Benzo(a)pyrene | s Benzo(g,h,i)perylene | Benzo(k)fluoranthene | Chrysene | Dibenz(a,h)anthracene | Fluoranthene | Fluorene | lindeno(1,2,3-c,d)pyrene | Naphthalene | PAHs (Sum of total) | Phenanthrene | Pyrene |
|   |                                | mg/кg                              | mg/кg                  | mg/кg        | mg/кg          | тд/кд<br>0 5 | mg/кg             | тд/кд          | mg/кg          | mg/кg                  | mg/кg                | mg/кg    | mg/кg                 | mg/кg        | _ mg/кg  | mg/кg                    | mg/кg       | mg/kg               | mg/кg        | mg/кg  |
| NEPM 2013 FILLUR/POS low pH_CEC_clay content - aged 0-2m                    | 0.5                            | 0.5                                | 0.5                    | 0.5          | 0.5            | 0.5          | 0.5               | 0.5            | 0.5            | 0.5                    | 0.5                  | 0.5      | 0.5                   | 0.5          | 0.5      | 0.5                      | 170         | 0.5                 | 0.5          | 0.5    |
| NEPM 2013 ESL UR/POS_Coarse Soil 0-2m / CCME 2010 SOGs                      |                                |                                    |                        |              |                |              |                   |                | 20             |                        |                      |          |                       |              |          |                          | 1/0         |                     |              |        |
| CRCCARE 2011 Soil HSL for Direct Contact. Intrusive Maintenance Worker 0-1m |                                |                                    |                        |              |                |              |                   |                | 20             |                        |                      |          |                       |              |          |                          | 29.000      |                     |              |        |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |                                |                                    |                        |              |                |              |                   |                |                |                        |                      |          |                       |              |          |                          | ,           |                     |              |        |
| NEPM 2013 HIL, Residential A  | 3                              |                                    |                        |              |                |              |                   |                |                |                        |                      |          |                       |              |          |                          |             | 300                 |              |        |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |                                |                                    |                        |              |                |              |                   |                |                |                        |                      |          |                       |              |          |                          |             |                     |              |        |
| 0-1m  |                                |                                    |                        |              |                |              |                   |                |                |                        |                      |          |                       |              |          |                          | 3           |                     |              |        |
| 1-2m  |                                |                                    |                        |              |                |              |                   |                |                |                        |                      |          |                       |              |          |                          | NL          |                     |              |        |
| 2-4m  |                                |                                    |                        |              |                |              |                   |                |                |                        |                      |          |                       |              |          |                          | NL          |                     |              |        |
| >4m   |                                |                                    |                        |              |                |              |                   |                |                |                        |                      |          |                       |              |          |                          | NL          |                     |              |        |
| Site Location Field ID Sample Date  |                                |                                    |                        |              |                |              |                   |                |                |                        |                      |          |                       |              |          |                          |             |                     |              |        |

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Site

Sample Date

|                         | ТР  | 01 0 2    |            | 0.6 | 12  | <05   | <0.5 | <05  | <05  | <0.5  | <0.5  | <0.5 | <0.5  | <05   | <0.5  | <05   | <05   | <05   | <05  | <0.5  | <05   | <0.5         | <05   |
|-------------------------|---|-----------|------------|-----|-----|-------|------|------|------|-------|-------|------|-------|-------|-------|-------|-------|-------|------|-------|-------|--------------|-------|
|                         | ТР  | 01_0.2    |            | 0.0 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         |   | 01_0.9    |            | 0.0 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         |       |
|                         |   | 02_0.1    |            | 0.0 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5<br><0.5 |       |
|                         |   | 02_0.4    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         |   | 03_0.2    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         |   | 03_1.2    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         |   | 04_0.1    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | IP  | 05_0.1    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 05_0.9    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 06_0.1    | 10/11/2018 | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 06_0.3    | -, ,       | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 07_0.1    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 07_0.4    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 07_0.6    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 08_0.4    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 09_0.3    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 10_0.1    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 11_0.2    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 11_1.2    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 12_0.2    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 13_0.1    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 13_0.4    |            | -   | -   | -     | -    | -    | -    | -     | -     | -    | -     | -     | -     | -     | -     | -     | -    | -     | -     | -            | -     |
|                         | TP  | 14_0.1    |            | -   | -   | -     | -    | -    | -    | -     | -     | -    | -     | -     | -     | -     | -     | -     | -    | -     | -     | -            | -     |
| Kyeemagh Infants School | TP  | 14_0.7    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 15_0.1    |            | 1.2 | 1.5 | <0.5  | <0.5 | <0.5 | <0.5 | 1.1   | 0.9   | 0.7  | <0.5  | 0.7   | 1     | <0.5  | 1.3   | <0.5  | <0.5 | <0.5  | 6.9   | 0.8          | 1.3   |
|                         | TP  | 15_0.6    | 17/11/2010 | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 16_0.1    | 17/11/2018 | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 16_0.8    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 17_0.1    |            | -   | -   | -     | -    | -    | -    | -     | -     | -    | -     | -     | -     | -     | -     | -     | -    | -     | -     | -            | -     |
|                         | TP  | 17 0.5    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 18 0.1    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 18 0.4    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 19 0.1    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 19 0.3    | 10/11/2018 | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP  | 20 0.1    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | ВН  | 02 0.5    |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | BF  | 12 1.0    | 17/11/2018 | 0.6 | 1.2 | < 0.5 | <0.5 | <0.5 | <0.5 | < 0.5 | <0.5  | <0.5 | < 0.5 | < 0.5 | <0.5  | < 0.5 | < 0.5 | < 0.5 | <0.5 | <0.5  | < 0.5 | <0.5         | <0.5  |
|                         | BH  | 03 0.5    |            | 0.6 | 1.2 | < 0.5 | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | < 0.5 | < 0.5 | < 0.5 | <0.5  | < 0.5 | <0.5 | <0.5  | < 0.5 | <0.5         | < 0.5 |
|                         | BH  | 14 0.4    |            | 1.3 | 1.7 | 0.6   | <0.5 | <0.5 | <0.5 | <0.5  | 1     | 0.9  | <0.5  | 0.8   | <0.5  | <0.5  | 0.6   | <0.5  | <0.5 | < 0.5 | 3.4   | <0.5         | 0.5   |
|                         | BH03_0.5<br>BH4_0.4<br>BH05_0.2-0.5             | 5 0.2-0.5 |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | < 0.5 | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | < 0.5 | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TPO   | 3 ASB1    | 10/11/2018 | -   |     | -     | _    | -    | -    | -     | -     | -    | -     | -     | -     | -     | -     | -     | -    | -     | -     |              | -     |
|                         | TP03_ASB1<br>TP04_0.4<br>ASB2<br>TP12_0.2 QA100 | 04 0.4    |            | _   | -   | _     | _    | _    | _    | _     | _     | -    | _     | _     | _     | _     | -     | _     | _    | -     | _     | _            |       |
|                         |   | ASB2      | 17/11/2018 |     | -   | _     | _    | -    | _    | _     | -     | -    | -     | _     | _     | _     | -     | _     | _    | -     | _     | _            | -     |
|                         |   | OA100     |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
| TF                      | TP12_0.2  | OA200     | 10/11/2018 | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP16_01   | OA300     |            | 0.6 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
|                         | TP16_0.1  | ΟΔ400     | 17/11/2018 | 0.0 | 1.2 | <0.5  | <0.5 | <0.5 | <0.5 | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5 | <0.5  | <0.5  | <0.5         | <0.5  |
| l                       |   |           |            | 0.0 | 1.2 | -0.5  | -0.5 | .0.5 | -0.5 | -0.5  | -0.5  | -0.5 | -0.5  | -0.5  | -0.5  | -0.5  | -0.5  | -0.5  | -0.5 | .0.5  | -0.5  | -0.5         | -0.5  |

| Maximum Concentration | 1.3 | 1.7 | 0.6 | <0.5 | <0.5 | <0.5 | 1.1 | 1   | 0.9 | <0.5 | 0.8 | 1   | <0.5 | 1.3 | <0.5 | <0.5 | <0.5 | 6.9 | 0.8 | 1.3 |
|-----------------------|-----|-----|-----|------|------|------|-----|-----|-----|------|-----|-----|------|-----|------|------|------|-----|-----|-----|
| Average Concentration | 0.6 | 1.2 | 0.3 | <0.5 | <0.5 | <0.5 | 0.3 | 0.3 | 0.3 | <0.5 | 0.3 | 0.3 | <0.5 | 0.3 | <0.5 | <0.5 | <0.5 | 0.5 | 0.3 | 0.3 |
| Standard Deviation    | 0.1 | 0.1 | 0.1 | 0    | 0    | 0    | 0.1 | 0.2 | 0.1 | 0    | 0.1 | 0.1 | 0    | 0.2 | 0    | 0    | 0    | 1.1 | 0.1 | 0.2 |



|   | Asbe                            | estos                               |                                 |         |         |                   |        | Metals |       |         |        |       |
|---|---------------------------------|-------------------------------------|---------------------------------|---------|---------|-------------------|--------|--------|-------|---------|--------|-------|
|   | Asbestos from ACM in Soil (Y/N) | Asbestos from FA & AF in Soil (Y/N) | Detected (Y) / Not Detected (N) | Arsenic | Cadmium | Chromium (III+VI) | Copper | Iron   | Lead  | Mercury | Nickel | Zinc  |
|   | %w/w                            | %w/w                                | Comment                         | mg/kg   | mg/kg   | mg/kg             | mg/kg  | mg/kg  | mg/kg | mg/kg   | mg/kg  | mg/kg |
| LOR   |                                 |                                     |                                 | 2       | 0.4     | 5                 | 5      | 20     | 5     | 0.1     | 5      | 5     |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |                                 |                                     |                                 | 100     |         | 160               | 60     |        | 1100  |         | 8      | 230   |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |                                 |                                     |                                 |         |         |                   |        |        |       |         |        |       |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m |                                 |                                     |                                 |         |         |                   |        |        |       |         |        |       |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 | 0.01                            | 0.001                               |                                 |         |         |                   |        |        |       |         |        |       |
| NEPM 2013 HIL, Residential A  |                                 |                                     |                                 | 100     | 20      |                   | 6000   |        | 300   | 40      | 400    | 7400  |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |                                 |                                     |                                 |         |         |                   |        |        |       |         |        |       |
| 0-1m  |                                 |                                     |                                 |         |         |                   |        |        |       |         |        |       |
| 1-2m  |                                 |                                     |                                 |         |         |                   |        |        |       |         |        |       |
| 2-4m  |                                 |                                     |                                 |         |         |                   |        |        |       |         |        |       |
| >4m   |                                 |                                     |                                 |         |         |                   |        |        |       |         |        |       |

| Site | Location | Field ID | Sample Date |   |   |   |    |      |     |     |   |     |      |     |    |
|------|----------|----------|-------------|---|---|---|----|------|-----|-----|---|-----|------|-----|----|
|      |          | TP01_0.2 |             | N | N | N | <2 | <0.4 | 8.8 | 27  | - | 19  | <0.1 | 15  | 44 |
|      |          | TP01_0.9 |             | - | - | - | <2 | <0.4 | <5  | <5  | - | 18  | <0.1 | <5  | 20 |
|      |          | TP02_0.1 |             | N | N | N | <2 | <0.4 | 18  | 9.4 | - | 35  | 0.7  | 15  | 72 |
|      |          | TP02_0.4 |             | N | N | N | <2 | <0.4 | 10  | 6.8 | - | 8.1 | <0.1 | 9.6 | 27 |
|      |          | TP03_0.2 |             | N | N | N | <2 | <0.4 | <5  | 6.6 | - | 19  | <0.1 | <5  | 35 |
|      |          | TP03 1.2 |             | N | N | N | <2 | <0.4 | <5  | <5  | - | 6.2 | <0.1 | <5  | 11 |

|                         |  |            |            |   |   |    |      |      |     |     |      |      |      | 1 / |     |
|-------------------------|--|------------|------------|---|---|----|------|------|-----|-----|------|------|------|-----|-----|
|                         | TF   | P04_0.1    | 7          | N | N | N  | <2   | <0.4 | <5  | 8.7 | -    | 38   | <0.1 | <5  | 36  |
|                         | TF   | P05_0.1    | 7          | N | N | N  | <2   | <0.4 | <5  | 5.2 | -    | 23   | <0.1 | <5  | 23  |
|                         | TF   | P05_0.9    |            | - | - | -  | <2   | <0.4 | <5  | <5  | 360  | <5   | <0.1 | <5  | <5  |
|                         | TF   | P06_0.1    | 10/11/2019 | N | N | N  | 2.8  | <0.4 | 130 | 37  | -    | 8.1  | <0.1 | 130 | 86  |
|                         | TF   | 206_0.3    | 10/11/2018 | - | - | -  | <2   | <0.4 | 13  | 16  | -    | 11   | <0.1 | 17  | 26  |
|                         | TF   | P07_0.1    | 7          | N | N | N  | 2.5  | <0.4 | 6.4 | 8.4 | -    | 17   | 1.5  | <5  | 46  |
|                         | TF   | P07_0.4    | ]          | - | - | -  | <2   | <0.4 | <5  | <5  | 1500 | 11   | 0.2  | <5  | 15  |
|                         | TF   | P07_0.6    | 7          | - | - | -  | <2   | <0.4 | <5  | 13  | -    | 9    | 0.7  | <5  | 20  |
|                         | TF   | P08_0.4    | ]          | - | - | -  | <2   | <0.4 | <5  | <5  | -    | 7.3  | <0.1 | <5  | 10  |
|                         | TF   | 209_0.3    | ]          | N | N | N  | <2   | <0.4 | <5  | <5  | -    | 10   | <0.1 | <5  | 14  |
|                         | TF   | P10_0.1    | ]          | - | - | -  | <2   | <0.4 | <5  | <5  | -    | 10   | <0.1 | <5  | 21  |
|                         | TF   | P11_0.2    | ]          | N | N | N  | <2   | <0.4 | <5  | <5  | -    | <5   | <0.1 | <5  | <5  |
|                         | TF   | P11_1.2    | ]          | - | - | -  | <2   | <0.4 | <5  | <5  | -    | 19   | <0.1 | <5  | 12  |
|                         | TF   | P12_0.2    |            | N | N | N  | <2   | <0.4 | <5  | <5  | 630  | 13   | <0.1 | <5  | 17  |
|                         | TF   | P13_0.1    |            | N | N | N  | <2   | <0.4 | 32  | 12  | -    | 11   | <0.1 | 30  | 40  |
|                         | TF   | P13_0.4    |            | N | N | N  | -    | -    | -   | -   | -    | -    | -    | -   | -   |
|                         | TF   | P14_0.1    |            | N | N | N  | -    | -    | -   | -   | -    | -    | -    | -   | -   |
| Kyeemagh Infants School | TF   | P14_0.7    |            | - | - | -  | <2   | <0.4 | <5  | <5  | -    | <5   | <0.1 | <5  | <5  |
|                         | TF   | P15_0.1    |            | - | - | -  | <2   | <0.4 | <5  | 16  | -    | 65   | 0.1  | <5  | 43  |
|                         | <br>TP15_0.6<br>TP16_0.1<br>TP16_0.8                                   | 17/11/2018 | -          | - | - | <2 | <0.4 | <5   | <5  | -   | <5   | <0.1 | <5   | 120 |     |
|                         |  |            | -          | - | - | <2 | <0.4 | <5   | <5  | -   | 17   | <0.1 | <5   | 18  |     |
|                         |  |            | -          | - | - | <2 | <0.4 | <5   | <5  | -   | 5.1  | <0.1 | <5   | 8.3 |     |
|                         | TF   | P17_0.1    |            | N | N | N  | -    | -    | -   | -   | -    | -    | -    | -   | -   |
|                         | TF   | P17_0.5    |            | - | - | -  | <2   | <0.4 | <5  | <5  | -    | <5   | <0.1 | <5  | <5  |
|                         | TF   | P18_0.1    |            | N | N | N  | <2   | <0.4 | <5  | 11  | -    | 56   | <0.1 | <5  | 130 |
|                         | IT I   | P18_0.4    |            | - | - | -  | <2   | <0.4 | <5  | <5  | -    | <5   | <0.1 | <5  | <5  |
|                         | AT T   | P19_0.1    | 10/11/2018 | N | N | N  | <2   | <0.4 | <5  | 7.3 | -    | 32   | <0.1 | <5  | 29  |
|                         | AT T   | P19_0.3    | 10,11,2010 | N | N | N  | <2   | <0.4 | <5  | 10  | -    | 10   | <0.1 | <5  | 25  |
|                         | AT I   | 20_0.1     |            | N | N | N  | <2   | <0.4 | 5.3 | 12  | -    | 42   | <0.1 | <5  | 66  |
|                         | BH   | 402_0.5    | 17/11/2018 | N | N | N  | <2   | <0.4 | <5  | <5  | -    | 9.8  | <0.1 | <5  | 17  |
|                         | В  | H2_1.0     |            | - | - | -  | <2   | <0.4 | <5  | 5.6 | -    | 12   | <0.1 | <5  | 24  |
|                         | BH   | 403_0.5    |            | N | N | N  | <2   | <0.4 | <5  | <5  | -    | 7    | <0.1 | <5  | 6.8 |
|                         | BH03_0.5<br>BH4_0.4<br>BH05_0.2-0.5<br>TP03_ASB1<br>TP04_0.4           |            | -          | - | - | <2 | <0.4 | <5   | 11  | -   | 13   | <0.1 | 13   | 25  |     |
|                         |  | 10/11/2018 | -          | - | - | <2 | <0.4 | <5   | <5  | -   | <5   | <0.1 | <5   | <5  |     |
|                         |  |            | N          | N | Y | -  | -    | -    | -   | -   | -    | -    |      | -   |     |
|                         |  |            | 0.1908     | N | Y | -  | -    | -    | -   | -   | -    | -    | -    | -   |     |
|                         | ASB2           TP12_0.2         QA100           TP12_0.2         QA200 |            | 17/11/2018 | N | N | Y  | -    | -    | -   | -   | -    | -    | -    | -   | -   |
|                         |  |            | 10/11/2018 |   | - | -  | <2   | <0.4 | <5  | 11  | -    | 14   | <0.1 | <5  | 15  |
|                         |  |            |            |   | - | -  | <5   | <1   | <2  | <5  | -    | 8    | <0.1 | <2  | 10  |
|                         | TP16_0.1         QA300           TP16_0.1         QA400                | 17/11/2018 |            | - | - | <2 | <0.4 | <5   | 5.2 | -   | 19   | <0.1 | <5   | 20  |     |
|                         | TP16_0.1   | QA400      |            | - | - | -  | <5   | <1   | <2  | 5   | -    | 21   | <0.1 | <2  | 22  |

| Maximum Concentration | 0.1908 | 0 | 0 | <5  | <1  | 130 | 37  | 1500 | 65 | 1.5 | 130 | 130 |
|-----------------------|--------|---|---|-----|-----|-----|-----|------|----|-----|-----|-----|
| Average Concentration |        |   |   | <5  | <1  | 7.4 | 7.2 | 830  | 16 | 0.1 | 7.6 | 29  |
| Standard Deviation    |        |   |   | 0.5 | 0.1 | 20  | 7.1 | 596  | 14 | 0.3 | 20  | 29  |



|   |         |          |                                    |          | norganics |            |          |                  |                           | VOCs              |                             | Organic | SVOCs |
|---|---------|----------|------------------------------------|----------|-----------|------------|----------|------------------|---------------------------|-------------------|-----------------------------|---------|-------|
|   | % Clay* | lron (%) | Conductivity (1:5 aqueous extract) | CEC      | pH (Lab)  | pH (Field) | pH (Fox) | Reaction Ratings | cis-1,4-Dichloro-2-butene | Pentachloroethane | trans-1,4-Dichloro-2-butene | TOC     | EPN   |
|   | %       | %        | US/CM                              | meq/100g | pH_Units  | PH UNITS   | pH Unit  | COMMENT          | mg/kg                     | mg/kg             | mg/kg                       | %       | mg/kg |
| LOR   | 1       | 0.01     | 10                                 | 0.05     | 0.1       | 0.1        | 0.1      |                  | 0.5                       | 0.5               | 0.5                         | 0.1     | 0.2   |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| NEPM 2013 HIL, Residential A  |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| 0-1m  |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| 1-2m  |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| 2-4m  |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| >4m   |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |

| Site | Location Field ID | Sample Date |   |   |   |   |   |   |   |   |   |   |   |   |      |
|------|-------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|------|
|      | TP01_0.2          |             | - | - | - | - | - | - | - | - | - | - | - | - | -    |
|      | TP01_0.9          |             | - | - | - | - | - | - | - | - | - | - | - | - | -    |
|      | TP02_0.1          |             | - | - | - | - | - | - | - | - | - | - | - | - | <0.2 |
|      | TP02_0.4          |             | - | - | - | - | - | - | - | - | - | - | - | - | -    |
|      | TP03_0.2          |             | - | - | - | - | - | - | - | - | - | - | - | - | <0.2 |
|      | TP03 1.2          |             | - | - | - | - | - | - | - | - | - | - | - | - | · ·  |

|                         | ТГ  | 204 0.1   | 1            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | < 0.2    |
|-------------------------|---|---|--------------|------------|------|----|------|-----|---|---|---|------|------|------|------|----------|
|                         |   | P05 0.1   |              | - I        | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | -        |
|                         | TF  | 205 0.9   |              | <1         | 0.04 | 12 | 0.76 | 5.9 | - | - | - | -    | -    | -    | 0.1  | -        |
|                         | TF  | <br>206_0.1   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | -        |
|                         | TF  | <br>206_0.3   | 10/11/2018   | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | -        |
|                         | TF  | <br>207_0.1   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | -        |
|                         | TF  | P07_0.4   |              | <1         | 0.15 | 58 | 2.8  | 5.8 | - | - | - | -    | -    | -    | 0.6  | -        |
|                         | TF  | P07_0.6   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | -        |
|                         | TF  | P08_0.4   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | -        |
|                         | TI  | 209_0.3   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | -        |
|                         | TI  | P10_0.1   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | -        |
|                         | TF  | P11_0.2   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | <0.2     |
|                         | TF  | P11_1.2   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | -        |
|                         | TF  | P12_0.2   |              | <1         | 0.06 | 31 | 1.9  | 5.9 | - | - | - | -    | -    | -    | 0.7  | <0.2     |
|                         | TF  | P13_0.1   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | <0.2     |
|                         | TF  | P13_0.4   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | -        |
|                         | TF  | P14_0.1   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | -        |
| Kyeemagh Infants School | TF  | P14_0.7   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | -        |
|                         | TF  | P15_0.1   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | -        |
|                         | TF  | TP15_0.6<br>TP16_0.1<br>TP16_0.8  | 17/11/2018   | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | <0.2     |
|                         | IT I  |   | 17, 11, 2010 | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | <u> </u> |
|                         | TI  |   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | <u> </u> |
|                         | IT I  | P17_0.1   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | <u> </u> |
|                         | IT I  | P17_0.5   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | -        |
|                         | IT III  | P18_0.1   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | <0.2     |
|                         | TF  | P18_0.4   |              | <u> </u>   | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | -        |
|                         | TF  | P19_0.1   | 10/11/2018   |            | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | <u> </u> |
|                         | TI  | P19_0.3   |              | · ·        | -    | -  | -    | -   | - | - | - | -    | -    | -    |      | <u> </u> |
|                         | TF  | 20_0.1  |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | <0.2     |
|                         | Bł  | 102_0.5   | 17/11/2018   | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | -        |
|                         | В   | H2_1.0  |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    |      | <u> </u> |
|                         | Bł  | BH2_1.0<br>BH03_0.5<br>BH4_0.4<br>BH05_0.2-0.5<br>TP03_ASB1<br>TP04_0.4<br>ASB2<br>TP12_0.2 QA100 |              | <u> </u>   | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    |          |
|                         | В   |   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    |      | -        |
|                         | BHC   |   | 10/11/2018   | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | -        |
|                         |   |   |              | ⊢-         | -    | -  | -    | -   | - | - | - | -    | -    | -    |      |          |
|                         |   |   |              | · ·        | -    | -  | -    | -   | - | - | - | -    | -    | -    |      |          |
|                         |   |   | 17/11/2018   | · ·        | -    | -  | -    | -   | - | - | - | -    | -    | -    |      | -        |
|                         | TP12_0.2         QA100           TP12_0.2         QA200 | 10/11/2018  | ŀ-           | -          | -    | -  | -    | -   | - | - | - | -    | -    |      | <0.2 |          |
|                         | TP12_0.2  | TP12_0.2         QA200           TP16_0.1         QA300   |              | <u>  -</u> | -    | -  | -    | -   | - | - | - | <0.5 | <0.5 | <0.5 |      |          |
|                         | TP16_0.1  | P12_0.2         QA200           P16_0.1         QA300           P16_0.1         QA400             | 17/11/2018   | ⊢-         | -    | -  |      |     | - | - | - |      | -    | -    |      |          |
|                         | IP16_0.1  | QA400   |              | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -    | <u> </u> |

| Maximum Concentration | <1 | 0.15 | 58 | 2.8 | 5.9 | 0 | 0 | 0 | <0.5 | <0.5 | <0.5 | 0.7 | <0.2 |
|-----------------------|----|------|----|-----|-----|---|---|---|------|------|------|-----|------|
| Average Concentration | <1 | 0.08 | 34 | 1.8 | 5.9 |   |   |   | <0.5 | <0.5 | <0.5 | 0.5 | <0.2 |
| Standard Deviation    | 0  | 0.06 | 23 | 1   | 0.1 |   |   |   |      |      |      | 0.3 | 0    |



|   |  |  |                                      |                          |                               | Chlori                    | nated H                           | ydrocarb                     | ons   |                 |   |   |                          |       |
|---|--|--|--------------------------------------|--------------------------|-------------------------------|---------------------------|-----------------------------------|------------------------------|---|-----------------|---|---|--------------------------|-------|
|   | SM Vic EPA IWRG 621 CHC (Total)*<br>DM | ල Vic EPA IWRG 621 Other CHC (Total)*<br>ව | 없<br>33<br>2,1,1,2-tetrachloroethane | 영제 1,1,1-trichloroethane | ଅଧି 1,1,2,2-tetrachloroethane | ଅଧି 1,1,2-trichloroethane | ୁଅ<br>ଅନ୍ନ<br>ସୁଧୀ-dichloroethane | ୁଅ<br>ଅନୁ 1,1-dichloroethene | gay/<br>bay/<br>bay/<br>bay/<br>bay/<br>bay/<br>bay/<br>bay/<br>b | ଅ<br>ଅନ୍ଧି<br>ଘ | g<br>g/g<br>g/g<br>g<br>g/g<br>g<br>g<br>g<br>g<br>g<br>g<br>g<br>g<br>g<br>g<br>g<br>g | gay/<br>bay/<br>bay/<br>bay/<br>bay/<br>bay/<br>bay/<br>bay/<br>b | ୁଷ୍ନ 1,2-dichloropropane | gy/gg |
| LOR   | 0.5                                    | 0.5  | 0.5                                  | 0.5                      | 0.5                           | 0.5                       | 0.5                               | 0.5                          | 0.5   | 0.5             | 0.5   | 0.5   | 0.5                      | 0.5   |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |  |  |                                      |                          |                               |                           |                                   |                              |   |                 |   |   |                          |       |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |  |  |                                      |                          |                               |                           |                                   |                              |   |                 |   |   |                          |       |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m |  |  |                                      |                          |                               |                           |                                   |                              |   |                 |   |   |                          |       |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |  |  |                                      |                          |                               |                           |                                   |                              |   |                 |   |   |                          |       |
| NEPM 2013 HIL, Residential A  |  |  |                                      |                          |                               |                           |                                   |                              |   |                 |   |   |                          |       |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |  |  |                                      |                          |                               |                           |                                   |                              |   |                 |   |   |                          |       |
| 0-1m  |  |  |                                      |                          |                               |                           |                                   |                              |   |                 |   |   |                          |       |
| 1-2m  |  |  |                                      |                          |                               |                           |                                   |                              |   |                 |   |   |                          |       |
| 2-4m  |  |  |                                      |                          |                               |                           |                                   |                              |   |                 |   |   |                          |       |
| >4m   |  |  |                                      |                          |                               |                           |                                   |                              |   |                 |   |   |                          |       |

| Site | Location | Field ID | Sample Date |      |      |      |      |      |      |      |      |   |      |   |      |      |      |
|------|----------|----------|-------------|------|------|------|------|------|------|------|------|---|------|---|------|------|------|
|      |          | TP01_0.2 |             | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | - | -    | -    | -    |
|      |          | TP01_0.9 | ]           | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | - | -    | -    | -    |
|      |          | TP02_0.1 | ]           | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | - | -    | -    | -    |
|      |          | TP02_0.4 | ]           | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | - | -    | -    | -    |
|      |          | TP03_0.2 | ]           | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | - | -    | -    | -    |
|      |          | TP03_1.2 |             | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | - | <0.5 | - | <0.5 | <0.5 | <0.5 |

|                         | TF                            | 204_0.1  |              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|-------------------------|-------------------------------|--|--------------|------|------|------|------|------|------|------|------|------|------|------|------|----------|------|
|                         | TF                            | 205_0.1  |              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | TF                            | 205_0.9  | ]            | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5 |
|                         | TF                            | 206_0.1  | 10/11/2018   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | TF                            | 206_0.3  | 10/11/2018   | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5 |
|                         | TF                            | 207_0.1  |              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | TF                            | 207_0.4  |              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | TF                            | 207_0.6  |              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | TF                            | 208_0.4  |              | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5 |
|                         | TF                            | 209_0.3  |              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | TF                            | 210_0.1  |              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | TF                            | 211_0.2  |              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | TF                            | 211_1.2  |              | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5 |
|                         | TF                            | 212_0.2  |              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | TF                            | 213_0.1  |              | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5 |
|                         | TF                            | 213_0.4  |              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | TF                            | 914_0.1  |              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
| Kyeemagh Infants School | TF                            | 914_0.7  |              | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5 |
|                         | TF                            | 915_0.1  |              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | TF                            | TP15_0.6<br>TP16_0.1<br>TP16_0.8   | 17/11/2018   | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5 |
|                         | TF                            |  | 1771172010   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | TF                            |  |              | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5 |
|                         | TF                            | 217_0.1  | _            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | TF                            | 217_0.5  | _            | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5 |
|                         | TF                            | 218_0.1  | _            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | TF                            | 218_0.4  |              | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5 |
|                         | TF                            | 219_0.1  | 10/11/2018   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | TF                            | 219_0.3  | 10, 11, 2010 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |          | -    |
|                         | TF                            | 20_0.1   |              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | BF                            | 102_0.5  | 17/11/2018   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | В                             | H2_1.0   |              | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5 |
|                         | BH                            | BH2_1.0<br>BH03_0.5<br>BH4_0.4<br>BH05_0.2-0.5   |              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | В                             |  | _            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    |
|                         | ВНО                           |  | 10/11/2018   | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5 |
|                         | TP03_ASB1<br>TP04_0.4<br>ASB2 |  | -            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        |      |
|                         |                               |  | -            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        |      |
|                         |                               | 17/11/2018   | -            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |          |      |
|                         | TP12_0.2                      | QA100  | 10/11/2018   | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5 |
|                         | TP12_0.2                      | IP12_0.2         QA100           IP12_0.2         QA200           IP16_0.1         QA200 | -, -,        | -    | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 |
|                         | TP16_0.1                      | 0.2 QA200<br>0.1 QA300<br>0.1 QA400  | 17/11/2018   | · ·  | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        |      |
|                         | TP16_0.1                      | TP16_0.1         QA300           TP16_0.1         QA400                                  | , -,         | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | <u> </u> | -    |

| Maximum Concentration | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Average Concentration | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Standard Deviation    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |      | 0    |      | 0    | 0    | 0    |



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|   | -dichloropropane | omochloromethane | omodichloromethane | moform | bon tetrachloride | orodibromomethane | oroethane | loroform | oromethane | -1,2-dichloroethene | -1,3-dichloropropene | promomethane | hloromethane | xachlorobutadiene | chloroethene | rachloroethene | ns-1, 2-dichloroethene | ns-1, 3-dichloropropene | ıyl chloride |
|---|------------------|------------------|--------------------|--------|-------------------|-------------------|-----------|----------|------------|---------------------|----------------------|--------------|--------------|-------------------|--------------|----------------|------------------------|-------------------------|--------------|
|   | 2,2              | Brc              | Brc                | Brc    | Cal               | <u>P</u>          | <u>P</u>  | <u> </u> | <u>P</u>   | , cis               | cis                  | <u> </u>     | Ğ            | Н<br>Ц            | Ë            | Tel            | tra                    | , tra                   |              |
|   | mg/kg            | mg/kg            | mg/kg              | mg/kg  | mg/kg             | mg/kg             | mg/kg     | mg/kg    | mg/kg      | mg/kg               | mg/kg                | mg/kg        | mg/kg        | mg/kg             | mg/kg        | mg/kg          | mg/kg                  | mg/kg                   | mg/kg        |
|   | 0.5              | 0.5              | 0.5                | 0.5    | 0.5               | 0.5               | 0.5       | 0.5      | 0.5        | 0.5                 | 0.5                  | 0.5          | 0.5          | 0.5               | 0.5          | 0.5            | 0.5                    | 0.5                     | 0.5          |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |                  |                  |                    |        |                   |                   |           |          |            |                     |                      |              |              |                   |              |                |                        |                         |              |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |                  |                  |                    |        |                   |                   |           |          |            |                     |                      |              |              |                   |              |                |                        |                         |              |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m |                  |                  |                    |        |                   |                   |           |          |            |                     |                      |              |              |                   |              |                |                        |                         |              |
| NEPM 2013 Schedule B1 Table / Asbestos HSLs                                 |                  |                  |                    |        |                   |                   |           |          |            |                     |                      |              |              |                   |              |                |                        |                         |              |
| NEPM 2013 HIL, Residential A  |                  |                  |                    |        |                   |                   |           |          |            |                     |                      |              |              |                   |              |                |                        |                         |              |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |                  |                  |                    |        |                   |                   |           |          |            |                     |                      |              |              |                   |              |                |                        |                         |              |
| 0-1m  |                  |                  |                    |        |                   |                   |           |          |            |                     |                      |              |              |                   |              |                |                        |                         |              |
| 1-2m  |                  |                  |                    |        |                   |                   |           |          |            |                     |                      |              |              |                   |              |                |                        |                         |              |
| 2-4m  |                  |                  |                    |        |                   |                   |           |          |            |                     |                      |              |              |                   |              |                |                        |                         |              |
| >4m   |                  |                  |                    |        |                   |                   |           |          |            |                     |                      |              |              |                   |              |                |                        |                         |              |
|   |                  |                  |                    |        |                   |                   |           |          |            |                     |                      |              |              |                   |              |                |                        |                         |              |

**Chlorinated Hydrocarbons** 

| Site Loca | ation | Field ID | Sample Date |   |      |      |      |      |      |      |      |      |      |      |      |      |   |      |      |      |      |      |
|-----------|-------|----------|-------------|---|------|------|------|------|------|------|------|------|------|------|------|------|---|------|------|------|------|------|
|           | Т     | P01_0.2  |             | - | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | -    | -    | -    | -    |
|           | Т     | P01_0.9  |             | - | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | -    | -    | -    | -    |
|           | Т     | P02_0.1  |             | - | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | -    | -    | -    | -    |
|           | Т     | P02_0.4  |             | - | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | -    | -    | -    | -    |
|           | Т     | P03_0.2  |             | - | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | -    | -    | -    | -    |
|           | Т     | P03_1.2  |             | - | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |

|                         |                |            |      | .010 | .0.0 | .010 | .0.0 | .0.0 | .010 | .0.0 | .010 | .010 | .010 | .0.0 | .010 |      | .010 | .010 |      | .010 | .0.0 |
|-------------------------|----------------|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                         | TP04_0.1       |            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP05_0.1       |            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP05_0.9       |            | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP06_0.1       | 10/11/2018 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP06_0.3       | 10/11/2018 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP07_0.1       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP07_0.4       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP07_0.6       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP08_0.4       | 7          | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP09_0.3       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP10_0.1       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP11_0.2       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP11_1.2       | 7          | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP12_0.2       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP13_0.1       |            | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP13_0.4       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP14_0.1       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Kyeemagh Infants School | TP14_0.7       | 7          | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP15_0.1       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP15_0.6       | 17/11/2010 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP16_0.1       | 1//11/2018 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP16_0.8       | 7          | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP17_0.1       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP17_0.5       | 7          | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP18_0.1       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP18_0.4       | 7          | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP19_0.1       | 10/11/2010 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP19_0.3       | 10/11/2018 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP20_0.1       |            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | BH02_0.5       | 17/11/2010 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | BH2_1.0        | 1//11/2018 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | BH03_0.5       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | BH4_0.4        |            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | BH05_0.2-0.5   | 10/11/2010 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP03_ASB1      | 10/11/2018 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP04_0.4       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | ASB2           | 17/11/2018 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP12_0.2 QA100 | 10/11/2010 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP12_0.2 QA200 | 10/11/2018 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <5   | <0.5 | <5   | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5   |
|                         | TP16_0.1 QA300 | 17/14/2010 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP16_0.1 QA400 | 1//11/2018 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         |                |            |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

| Maximum Concentration | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | <0.5 | <5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 |
|-----------------------|------|------|------|------|------|------|----|------|----|------|------|------|------|------|------|------|------|------|----|
| Average Concentration | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | <0.5 | <5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 |
| Standard Deviation    |      | 0    | 0    | 0    | 0    | 0    | 1  | 0    | 1  | 0    | 0    | 0    | 0    |      | 0    | 0    | 0    | 0    | 1  |



|   |                        |                        |                   |                     |                     | Halog               | enated          | Hydroca         | rbons        |              |               |                         |             |                        |
|---|------------------------|------------------------|-------------------|---------------------|---------------------|---------------------|-----------------|-----------------|--------------|--------------|---------------|-------------------------|-------------|------------------------|
|   | 1,2,3-trichlorobenzene | 1,2,4-trichlorobenzene | 1,2-dibromoethane | 1,2-dichlorobenzene | 1,3-dichlorobenzene | 1,4-dichlorobenzene | 2-chlorotoluene | 4-chlorotoluene | Bromobenzene | Bromomethane | Chlorobenzene | Dichlorodifluoromethane | lodomethane | Trichlorofluoromethane |
|   | mg/kg                  | mg/kg                  | mg/kg             | mg/kg               | mg/kg               | mg/kg               | mg/kg           | mg/kg           | mg/kg        | mg/kg        | mg/kg         | mg/kg                   | mg/kg       | mg/kg                  |
| LOR   | 0.5                    | 0.5                    | 0.5               | 0.5                 | 0.5                 | 0.5                 | 0.5             | 0.5             | 0.5          | 0.5          | 0.5           | 0.5                     | 0.5         | 0.5                    |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| NEPM 2013 HIL, Residential A  |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| 0-1m  |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| 1-2m  |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| 2-4m  |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| >4m   |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |

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| Site | Location | Field ID | Sample Date |   |   |      |      |      |      |   |      |      |      |      |      |      |         |
|------|----------|----------|-------------|---|---|------|------|------|------|---|------|------|------|------|------|------|---------|
|      |          | TP01_0.2 |             | - | - | -    | -    | -    | -    | - | -    | -    | -    | -    | -    | -    | -       |
|      |          | TP01_0.9 |             | - | - | -    | -    | -    | -    | - | -    | -    | -    | -    | -    | -    | -       |
|      |          | TP02_0.1 |             | - | - | -    | -    | -    | -    | - | -    | -    | -    | -    | -    | -    | -       |
|      |          | TP02_0.4 |             | - | - | -    | -    | -    | -    | - | -    | -    | -    | -    | -    | -    | -       |
|      |          | TP03_0.2 |             | - | - | -    | -    | -    | -    | - | -    | -    | -    | -    | -    | -    | -       |
|      |          | TP03_1.2 |             | - | - | <0.5 | <0.5 | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5    |
|      |          |          |             |   |   |      |      |      |      |   |      |      |      |      |      |      | <u></u> |

|                         | TF       | 204_0.1   |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|-------------------------|----------|-----------|--------------|------|------|-------|------|-------|------|------|-------|-------|------|------|------|------|------|
|                         | TF       | P05_0.1   |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TF       | 205_0.9   |              | -    | -    | <0.5  | <0.5 | <0.5  | <0.5 | -    | <0.5  | <0.5  | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TF       | 206_0.1   | 10/11/2018   | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TF       | 206_0.3   | 10/11/2018   | -    | -    | <0.5  | <0.5 | <0.5  | <0.5 | -    | <0.5  | <0.5  | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TF       | 207_0.1   |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TF       | 207_0.4   |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TF       | P07_0.6   |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TF       | 208_0.4   |              | -    | -    | <0.5  | <0.5 | <0.5  | <0.5 | -    | <0.5  | <0.5  | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TF       | 209_0.3   |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TF       | 210_0.1   |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TF       | 211_0.2   |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TF       | P11_1.2   |              | -    | -    | <0.5  | <0.5 | <0.5  | <0.5 | -    | <0.5  | <0.5  | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TF       | 212_0.2   |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TF       | 213_0.1   |              | -    | -    | <0.5  | <0.5 | <0.5  | <0.5 | -    | <0.5  | <0.5  | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TF       | 213_0.4   |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TF       | 914_0.1   |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
| Kyeemagh Infants School | TF       | 914_0.7   |              | -    | -    | <0.5  | <0.5 | <0.5  | <0.5 | -    | <0.5  | <0.5  | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TF       | 915_0.1   |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TF       | 215_0.6   | 17/11/2018   | -    | -    | <0.5  | <0.5 | <0.5  | <0.5 | -    | <0.5  | <0.5  | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TF       | 216_0.1   | 17711/2010   | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TF       | 216_0.8   |              | -    | -    | <0.5  | <0.5 | <0.5  | <0.5 | -    | <0.5  | <0.5  | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TF       | 217_0.1   |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TF       | 217_0.5   |              | -    | -    | <0.5  | <0.5 | <0.5  | <0.5 | -    | <0.5  | <0.5  | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TF       | 218_0.1   |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TF       | 218_0.4   |              | -    | -    | <0.5  | <0.5 | <0.5  | <0.5 | -    | <0.5  | <0.5  | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TF       | 219_0.1   | 10/11/2018   | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TF       | 219_0.3   | 10, 11, 2010 | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TF       | 20_0.1    |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | BF       | 102_0.5   | 17/11/2018   | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | В        | H2_1.0    |              | -    | -    | <0.5  | <0.5 | <0.5  | <0.5 | -    | <0.5  | <0.5  | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | BH       | 103_0.5   |              | · ·  | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | В        | H4_0.4    |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | вно      | 5_0.2-0.5 | 10/11/2018   | -    | -    | <0.5  | <0.5 | <0.5  | <0.5 | -    | <0.5  | <0.5  | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP       | D3_ASB1   |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TF       | 204_0.4   |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         |          | ASB2      | 17/11/2018   | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TP12_0.2 | QA100     | 10/11/2018   | -    | -    | < 0.5 | <0.5 | < 0.5 | <0.5 | -    | < 0.5 | < 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP12_0.2 | QA200     |              | <0.5 | <0.5 | <0.5  | <0.5 | <0.5  | <0.5 | <0.5 | <0.5  | <0.5  | <5   | <0.5 | <5   | <0.5 | <5   |
|                         | TP16_0.1 | QA300     | 17/11/2018   | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |
|                         | TP16_0.1 | QA400     |              | -    | -    | -     | -    | -     | -    | -    | -     | -     | -    | -    | -    | -    | -    |

| Maximum Concentration | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | <0.5 | <5 | <0.5 | <5 |
|-----------------------|------|------|------|------|------|------|------|------|------|----|------|----|------|----|
| Average Concentration | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | <0.5 | <5 | <0.5 | <5 |
| Standard Deviation    |      |      | 0    | 0    | 0    | 0    |      | 0    | 0    | 1  | 0    | 1  | 0    | 1  |



|   |                               |                                     |         |       |        | Organ             | ochlorin | e Pestici | ides            |                   |       |       |       |             |
|---|-------------------------------|-------------------------------------|---------|-------|--------|-------------------|----------|-----------|-----------------|-------------------|-------|-------|-------|-------------|
|   | Vic EPA IWRG 621 OCP (Total)* | Vic EPA IWRG 621 Other OCP (Total)* | 4,4-DDE | a-BHC | Aldrin | Aldrin + Dieldrin | b-BHC    | Chlordane | Chlordane (cis) | Chlordane (trans) | d-BHC | DDD   | DDT   | DDT+DDE+DDD |
|   | MG/KG                         | MG/KG                               | mg/kg   | mg/kg | mg/kg  | mg/kg             | mg/kg    | mg/kg     | mg/kg           | mg/kg             | mg/kg | mg/kg | mg/kg | mg/kg       |
| LOR   | 0.1                           | 0.1                                 | 0.05    | 0.05  | 0.05   | 0.05              | 0.05     | 0.1       | 0.05            | 0.05              | 0.05  | 0.05  | 0.05  | 0.05        |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       | 180   |             |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       |       |             |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       |       |             |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       |       |             |
| NEPM 2013 HIL, Residential A  |                               |                                     |         |       |        | 6                 |          | 50        |                 |                   |       |       |       | 240         |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       |       |             |
| 0-1m  |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       |       |             |
| 1-2m  |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       |       |             |
| 2-4m  |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       |       |             |
| >4m   |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       |       |             |

| Site                    | Location | Field ID   | Sample Date  |          |      |       |       |       |       |       |       |       |       |       |       |          |       |
|-------------------------|----------|------------|--------------|----------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|
|                         | Т        | P01_0.2    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P01_0.9    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P02_0.1    |              | 1.46     | 0.7  | 0.06  | <0.05 | <0.05 | 0.64  | <0.05 | 0.7   | -     | -     | <0.05 | <0.05 | 0.06     | 0.12  |
|                         | Т        | P02_0.4    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P03_0.2    |              | <0.1     | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05    | <0.05 |
|                         | Т        | P03_1.2    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P04_0.1    |              | <0.1     | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05    | <0.05 |
|                         | Т        | P05_0.1    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P05_0.9    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P06_0.1    | 10/11/2018   | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P06_0.3    | 10/11/2018   | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P07_0.1    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P07_0.4    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P07_0.6    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P08_0.4    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P09_0.3    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P10_0.1    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P11_0.2    |              | <0.1     | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05    | <0.05 |
|                         | Т        | P11_1.2    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P12_0.2    |              | <0.1     | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05    | <0.05 |
|                         | Т        | P13_0.1    |              | <0.1     | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05    | <0.05 |
|                         | Т        | P13_0.4    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P14_0.1    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
| Kyeemagh Infants School | Т        | P14_0.7    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P15_0.1    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P15_0.6    | 17/11/2018   | <0.1     | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05    | <0.05 |
|                         | Т        | P16_0.1    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P16_0.8    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P17_0.1    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P17_0.5    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -        | -     |
|                         | Т        | P18_0.1    |              | <0.1     | <0.1 | <0.05 | <0.05 | <0.05 | 0.05  | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05    | <0.05 |
|                         | Т        | P18_0.4    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | - '      | -     |
|                         | Т        | P19_0.1    | 10/11/2018   | <u> </u> | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | - '      | -     |
|                         | Т        | P19_0.3    | 10, 11, 2010 | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | - '      | -     |
|                         | Т        | P20_0.1    |              | <0.1     | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05    | <0.05 |
|                         | В        | H02_0.5    | 17/11/2018   | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | - '      | -     |
|                         | E        | 3H2_1.0    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | - '      | -     |
|                         | В        | H03_0.5    |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | - '      | -     |
|                         | E        | 3H4_0.4    |              | · ·      | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | - '      | -     |
|                         | BH       | 05_0.2-0.5 | 10/11/2018   | - ·      | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | - '      | -     |
|                         | TF       | 203_ASB1   |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | - '      | -     |
|                         | Т        | P04_0.4    |              | · ·      | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | - '      | -     |
|                         |          | ASB2       | 17/11/2018   | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | <u> </u> | -     |
|                         | TP12_0.2 | QA100      | 10/11/2018   | <0.1     | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05    | <0.05 |
|                         | TP12_0.2 | QA200      |              | · ·      | -    | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.2     | <0.05 |
|                         | TP16_0.1 | QA300      | 17/11/2018   | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | <u> </u> | -     |
|                         | TP16_0.1 | QA400      |              | -        | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | <u> </u> | -     |

| Maximum Concentration | 1.5 | 0.7 | 0.06 | <0.05 | <0.05 | 0.64 | <0.05 | 0.7 | <0.05 | <0.05 | <0.05 | <0.05 | <0.2 | 0.12 |
|-----------------------|-----|-----|------|-------|-------|------|-------|-----|-------|-------|-------|-------|------|------|
| Average Concentration | 0.2 | 0.1 | 0.03 | <0.05 | <0.05 | 0.08 | <0.05 | 0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.2 | 0.03 |
| Standard Deviation    | 0.5 | 0.2 | 0.01 | 0     | 0     | 0.18 | 0     | 0.2 |       |       | 0     | 0     | 0    | 0.03 |



|   |          |            |              |               |                     | Orga   | nochlori        | ne Pesti      | cides           |            |                    |                   |              |           |
|---|----------|------------|--------------|---------------|---------------------|--------|-----------------|---------------|-----------------|------------|--------------------|-------------------|--------------|-----------|
|   | Dieldrin | Endosulfan | Endosulfan I | Endosulfan II | Endosulfan sulphate | Endrin | Endrin aldehyde | Endrin ketone | g-BHC (Lindane) | Heptachlor | Heptachlor epoxide | Hexachlorobenzene | Methoxychlor | Toxaphene |
|   | mg/kg    | mg/kg      | mg/kg        | mg/kg         | mg/kg               | mg/kg  | mg/kg           | mg/kg         | mg/kg           | mg/kg      | mg/kg              | mg/kg             | mg/kg        | mg/kg     |
| LOR   | 0.05     | 0.05       | 0.05         | 0.05          | 0.05                | 0.05   | 0.05            | 0.05          | 0.05            | 0.05       | 0.05               | 0.05              | 0.05         | 1         |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |
| NEPM 2013 HIL, Residential A  |          | 270        |              |               |                     | 10     |                 |               |                 | 6          |                    | 10                | 300          | 20        |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |
| 0-1m  |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |
| 1-2m  |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |
| 2-4m  |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |
| >4m   |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |

| Site                    | Location | Field ID    | Sample Date  |          |       |        |        |       |        |        |        |        |        |        |        |        |          |
|-------------------------|----------|-------------|--------------|----------|-------|--------|--------|-------|--------|--------|--------|--------|--------|--------|--------|--------|----------|
|                         | Т        | P01_0.2     |              | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      | -      | -        |
|                         | Т        | P01_0.9     | 7            | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      | -      | -        |
|                         | Т        | P02 0.1     | 7            | 0.64     | -     | <0.05  | <0.05  | <0.05 | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <1       |
|                         | Т        | <br>P02_0.4 | 1            | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      | -      | -        |
|                         | Т        | P03_0.2     | 1            | <0.05    | -     | <0.05  | <0.05  | <0.05 | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | < 0.05 | <1       |
|                         | T        | P03_1.2     | -            | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      | -      | _        |
|                         | T        | P04_0_1     | -            | < 0.05   | -     | < 0.05 | < 0.05 | <0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | <1       |
|                         | і<br>Т   | P05_01      | -            | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      |        | -      |          |
|                         | T        | P05_0.1     | -            | <u> </u> | -     |        |        |       |        |        |        |        |        | -      |        |        | <u> </u> |
|                         |          | P06_0.1     | -            |          |       |        |        |       |        |        |        |        |        |        |        |        |          |
|                         |          |             | - 10/11/2018 | <u> </u> | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      |        |          |
|                         |          | PU0_0.3     | -            | <u> </u> |       | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      |        | -        |
|                         |          | P07_0.1     | -            |          | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      |        | -        |
|                         |          | P07_0.4     | -            | <u> </u> | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      |        | -        |
|                         |          | P07_0.6     | -            | <u> </u> | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      |        |          |
|                         | T        | P08_0.4     | -            |          | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      |        | -        |
|                         | T        | P09_0.3     | _            | <u> </u> | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      |        |          |
|                         | Т        | P10_0.1     |              | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      | -      | -        |
|                         | Т        | P11_0.2     |              | <0.05    | -     | <0.05  | <0.05  | <0.05 | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <1       |
|                         | Т        | P11_1.2     |              | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      | -      | -        |
|                         | Т        | P12_0.2     |              | <0.05    | -     | <0.05  | <0.05  | <0.05 | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <1       |
|                         | Т        | P13_0.1     |              | <0.05    | -     | <0.05  | <0.05  | <0.05 | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <1       |
|                         | Т        | P13_0.4     | 7            | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      | -      | -        |
|                         | Т        | P14_0.1     |              | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      | -      | -        |
| Kyeemagh Infants School | Т        | P14_0.7     |              | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      | -      | -        |
|                         | Т        | P15_0.1     | -            | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      | -      | -        |
|                         | Т        | <br>P15 0.6 | -            | <0.05    | -     | <0.05  | <0.05  | <0.05 | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <1       |
|                         | Т        | <br>P16_0.1 | - 17/11/2018 | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      | -      | -        |
|                         | Т        | P16 0.8     | 1            | · ·      | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      | -      | -        |
|                         | Т        | P17_0.1     | -            | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      | -      | -        |
|                         | T        | P17_05      | -            | -        | -     | _      | -      | -     | -      | -      | -      | _      | _      | _      | -      |        | -        |
|                         | T        | P18 0 1     | -            | 0.05     | -     | <0.05  | <0.05  | <0.05 | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <1       |
|                         | T        | P18 0 /     | -            | 0.05     |       |        |        | -     | -      |        |        | -      | -      | -      | -      | -      |          |
|                         | т<br>Т   | D10_0.4     |              |          |       |        |        |       |        | _      |        |        |        |        |        |        |          |
|                         |          | P10_03      | - 10/11/2018 |          |       |        |        |       |        |        |        |        |        |        |        |        |          |
|                         |          | F 19_0.3    |              | -0.0E    | -     |        |        |       | -0.05  |        |        | -      | -0.05  |        |        |        |          |
|                         |          |             | -            | <0.05    | -     | <0.03  | <0.03  | <0.03 | <0.03  | <0.05  | <0.05  | <0.03  | <0.03  | <0.03  | <0.03  | <0.03  | <u> </u> |
|                         |          |             | - 17/11/2018 | <u> </u> | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      |        |          |
|                         | E        | H2_1.0      | -            |          | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      |        | -        |
|                         | В        | H03_0.5     | 1            | · ·      | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      |        | -        |
|                         | E        | 5H4_0.4     | -            |          | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      |        | -        |
|                         | BHC      | 05_0.2-0.5  | - 10/11/2018 | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      |        | -        |
|                         | TP       | 03_ASB1     |              | <u> </u> | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      |        | -        |
|                         | т        | P04_0.4     |              | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      | -      | -        |
|                         |          | ASB2        | 17/11/2018   | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      | -      | -        |
|                         | TP12_0.2 | QA100       | 10/11/2018   | <0.05    | -     | <0.05  | <0.05  | <0.05 | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <1       |
|                         | TP12_0.2 | QA200       |              | <0.05    | <0.05 | <0.05  | <0.05  | <0.05 | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.05  | <0.2   | -        |
|                         | TP16_0.1 | QA300       | 17/11/2010   | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      | -      | -        |
|                         | TP16_0.1 | QA400       | 1//11/2010   | -        | -     | -      | -      | -     | -      | -      | -      | -      | -      | -      | -      | -      | -        |

| Maximum Concentration | 0.64 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.2 | <1 |
|-----------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|----|
| Average Concentration | 0.08 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.2 | <1 |
| Standard Deviation    | 0.18 |       | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0    | 0  |



|   |           |                  |                     |                 |                 |                 | Org          | ganophos            | sphorou   | s Pestici | des       |          |            |            |            |        |          |
|---|-----------|------------------|---------------------|-----------------|-----------------|-----------------|--------------|---------------------|-----------|-----------|-----------|----------|------------|------------|------------|--------|----------|
|   | Tokuthion | Azinophos methyl | Bolstar (Sulprofos) | Bromophos-ethyl | Carbophenothion | Chlorfenvinphos | Chlorpyrifos | Chlorpyrifos-methyl | Coumaphos | Demeton-O | Demeton-S | Diazinon | Dichlorvos | Dimethoate | Disulfoton | Ethion | Ethoprop |
|   | mg/kg     | mg/kg            | mg/kg               | mg/kg           | mg/kg           | mg/kg           | mg/kg        | mg/kg               | mg/kg     | mg/kg     | mg/kg     | mg/kg    | mg/kg      | mg/kg      | mg/kg      | mg/kg  | mg/kg    |
| OR  | 0.2       | 0.2              | 0.2                 | 0.05            | 0.05            | 0.2             | 0.2          | 0.2                 | 2         | 0.2       | 0.2       | 0.2      | 0.2        | 0.2        | 0.2        | 0.2    | 0.2      |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m   |           |                  |                     |                 |                 |                 |              |                     |           |           |           |          |            |            |            |        |          |
|   |           |                  |                     |                 |                 |                 |              |                     |           |           |           |          |            |            |            |        |          |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs   |           |                  |                     |                 |                 |                 |              |                     |           |           |           |          |            |            |            |        |          |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs<br>CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m  |           |                  |                     |                 |                 |                 |              |                     |           |           |           |          |            |            |            |        |          |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs<br>CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m<br>NEPM 2013 Schedule B1 Table 7 Asbestos HSLs   |           |                  |                     |                 |                 |                 |              |                     |           |           |           |          |            |            |            |        |          |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs<br>CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m<br>NEPM 2013 Schedule B1 Table 7 Asbestos HSLs<br>NEPM 2013 HIL, Residential A   |           |                  |                     |                 |                 |                 | 160          |                     |           |           |           |          |            |            |            |        |          |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs<br>CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m<br>NEPM 2013 Schedule B1 Table 7 Asbestos HSLs<br>NEPM 2013 HIL, Residential A<br>NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand                         |           |                  |                     |                 |                 |                 | 160          |                     |           |           |           |          |            |            |            |        |          |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs<br>CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m<br>NEPM 2013 Schedule B1 Table 7 Asbestos HSLs<br>NEPM 2013 HIL, Residential A<br>NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand<br>0-1m                 |           |                  |                     |                 |                 |                 | 160          |                     |           |           |           |          |            |            |            |        |          |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs<br>CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m<br>NEPM 2013 Schedule B1 Table 7 Asbestos HSLs<br>NEPM 2013 HIL, Residential A<br>NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand<br>0-1m<br>1-2m         |           |                  |                     |                 |                 |                 | 160          |                     |           |           |           |          |            |            |            |        |          |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs<br>CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m<br>NEPM 2013 Schedule B1 Table 7 Asbestos HSLs<br>NEPM 2013 HIL, Residential A<br>NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand<br>0-1m<br>1-2m<br>2-4m |           |                  |                     |                 |                 |                 | 160          |                     |           |           |           |          |            |            |            |        |          |

| Site Location Field ID Sample Date   |                           |                              |                         |                         |                |                         |                |
|--|---------------------------|------------------------------|-------------------------|-------------------------|----------------|-------------------------|----------------|
| TP01_0.2   |                           | -                            | -                       | -                       | -              | -                       | -              |
| TP01_0.9   |                           | -                            | -                       | -                       | -              | -                       | -              |
| TP02 0.1 <0.2 <0.2 <0.2 <0.2 <2  | <0.2 <0.2                 | <0.2                         | <0.2                    | <0.2                    | <0.2           | <0.2                    | <0.2           |
| TP02 0.4   |                           | -                            | -                       | -                       | -              | -                       | -              |
|  | <0.2 <0.2                 | <0.2                         | <0.2                    | <0.2                    | <0.2           | <0.2                    | <0.2           |
| TP03 1.2   |                           | -                            | -                       | -                       | -              | -                       | -              |
| TP04 0.1   | <0.2 <0.2                 | <0.2                         | <0.2                    | <0.2                    | <0.2           | <0.2                    | <0.2           |
| TP05_0.1   |                           | -                            | -                       | -                       | -              | -                       | -              |
| TP05_0.9   |                           | -                            | -                       | -                       | -              | -                       | -              |
|  |                           | -                            | -                       | -                       | -              | -                       | -              |
| TP06_0.3   |                           | -                            | -                       | -                       | -              | -                       | -              |
|  |                           | -                            | -                       | -                       | _              | -                       | -              |
|  |                           |                              |                         |                         |                |                         | -              |
|  |                           |                              |                         |                         |                |                         |                |
|  |                           | -                            | -                       | -                       |                | -                       | -              |
|  |                           |                              |                         |                         |                |                         |                |
| TP10_0.1   |                           |                              |                         | -                       | -              | -                       | -              |
| TP10_0.1   |                           |                              | -                       | -                       | -              | -                       | -              |
| TP11_0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <2  | <0.2 <0.2                 | <0.2                         | <0.2                    | <0.2                    | <0.2           | <0.2                    | <0.2           |
| IP11_1.2     I <thi< th="">     I     <t< td=""><td></td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></t<></thi<>  |                           | -                            | -                       | -                       | -              | -                       | -              |
| TP12_0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2     <0.2   | <0.2 <0.2                 | <0.2                         | <0.2                    | <0.2                    | <0.2           | <0.2                    | <0.2           |
| IP13_0.1     <0.2  | <0.2 <0.2                 | <0.2                         | <0.2                    | <0.2                    | <0.2           | <0.2                    | <0.2           |
|  |                           | -                            | -                       | -                       | -              | -                       | -              |
|  |                           | -                            | -                       | -                       | -              | -                       | -              |
| Kyeemagh Infants School     TP14_0.7   |                           | -                            | -                       | -                       | -              | -                       | -              |
| TP15_0.1   |                           | -                            | -                       | -                       | -              | -                       | -              |
| TP15_0.6 <a></a> 17/11/2018 <0.2   | <0.2 <0.2                 | <0.2                         | <0.2                    | <0.2                    | <0.2           | <0.2                    | <0.2           |
| TP16_0.1   |                           | -                            | -                       | -                       | -              | -                       | -              |
| TP16_0.8   |                           | -                            | -                       | -                       | -              | -                       | -              |
| TP17_0.1   |                           | -                            | -                       | -                       | -              | -                       | -              |
| TP17_0.5   |                           | -                            | -                       | -                       | -              | -                       | -              |
| TP18_0.1 <0.2 <0.2 <0.2 <0.2 <0.2 <2   | <0.2 <0.2                 | <0.2                         | <0.2                    | <0.2                    | <0.2           | <0.2                    | <0.2           |
| TP18_0.4   |                           | -                            | -                       | -                       | -              | -                       | -              |
| TP19_0.1   |                           | -                            | -                       | -                       | -              | -                       | -              |
| TP19_0.3   |                           | -                            | -                       | -                       | -              | -                       | -              |
| TP20_0.1 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <2  | <0.2 <0.2                 | <0.2                         | <0.2                    | <0.2                    | <0.2           | <0.2                    | <0.2           |
| BH02_0.5   |                           | -                            | -                       | -                       | -              | -                       | -              |
| BH2_1.0  |                           | -                            | -                       | -                       | -              | -                       | -              |
| BH03_0.5   |                           | -                            | -                       | -                       | -              | -                       | -              |
| BH4_0.4  |                           | -                            | -                       | -                       | -              | -                       | -              |
| BH05_0.2-0.5   |                           | -                            | -                       | -                       | -              | -                       | -              |
| TP03_ASB1  |                           | -                            | -                       | -                       | -              | -                       | -              |
| TP04_0.4   |                           |                              | -                       | -                       | -              | -                       | -              |
| ASB2 17/11/2018  |                           |                              |                         | -                       | 1              |                         |                |
|  |                           | -                            | -                       | -                       | -              | -                       | -              |
|  | <br><br><0.2 <0.2         |                              | - <0.2                  | -<br><0.2               | - <0.2         | -<br><0.2               | -<br><0.2      |
| IPI2_0.2         QA100         10/11/2018         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2         <0.2 | <br><br><0.2 <0.2<br>     | -<br>-<br><0.2<br><0.05      | -<br><0.2<br><0.05      | -<br><0.2<br><0.05      | -<br><0.2<br>- | -<br><0.2<br><0.05      | -<br><0.2<br>- |
| TP12_0.2       QA100       10/11/2018       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2  | <br><br><0.2 <0.2<br><br> | -<br>-<br><0.2<br><0.05<br>- | -<br><0.2<br><0.05<br>- | -<br><0.2<br><0.05<br>- | -<br><0.2<br>- | -<br><0.2<br><0.05<br>- | -<br><0.2<br>- |

| Statistical Summa | iry |
|-------------------|-----|
|-------------------|-----|

| Maximum Concentration | <0.2 | <0.2 | <0.2 | <0.05 | <0.05 | <0.2 | <0.2 | <0.2 | <2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
|-----------------------|------|------|------|-------|-------|------|------|------|----|------|------|------|------|------|------|------|------|
| Average Concentration | <0.2 | <0.2 | <0.2 | <0.05 | <0.05 | <0.2 | <0.2 | <0.2 | <2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| Standard Deviation    | 0    | 0    | 0    |       |       | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |



|   |              |               |          |           |         |                  | Orga                 | anophos       | phorous        | s Pestici | des     |            |            |        |          |               |                   |
|---|--------------|---------------|----------|-----------|---------|------------------|----------------------|---------------|----------------|-----------|---------|------------|------------|--------|----------|---------------|-------------------|
|   | Fenitrothion | Fensulfothion | Fenthion | Malathion | Merphos | Methyl parathion | Mevinphos (Phosdrin) | Monocrotophos | Naled (Dibrom) | Omethoate | Phorate | Prothiofos | Pyrazophos | Ronnel | Terbufos | Trichloronate | Tetrachlorvinphos |
|   | mg/kg        | mg/kg         | mg/kg    | mg/kg     | mg/kg   | mg/kg            | mg/kg                | mg/kg         | mg/kg          | mg/kg     | mg/kg   | mg/kg      | mg/kg      | mg/kg  | mg/kg    | mg/kg         | mg/kg             |
| LOR   | 0.2          | 0.2           | 0.2      | 0.2       | 0.2     | 0.2              | 0.2                  | 2             | 0.2            | 2         | 0.2     | 0.05       | 0.2        | 0.2    | 0.2      | 0.2           | 0.2               |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
| NEPM 2013 HIL, Residential A  |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
| 0-1m  |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
| 1-2m  |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
| 2-4m  |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
| >4m   |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |

| TP01_0.2   |           |      |
|--|-----------|------|
|  |           | -    |
|  |           | -    |
| TP02_0.1 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2   | 2 <0.2 <0 | <0.2 |
| TP02_0.4   |           | -    |
| TP03_0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <  | 2 <0.2 <0 | <0.2 |
| TP03_1.2   |           | -    |
| TP04_0.1 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2   | 2 <0.2 <0 | <0.2 |
| TP05_0.1   |           | -    |
| TP05_0.9   |           | -    |
| TP06_0.1   |           | -    |
| TP06_0.3   |           | -    |
| TP07_0.1   |           | -    |
| TP07_0.4   |           | -    |
| TP07 0.6   |           | -    |
|  |           | -    |
| TP09_0.3   |           | -    |
|  |           | -    |
|  | 2 <0.2 <0 | <0.2 |
| TP11 1.2   |           | -    |
|  | 2 <0.2 <0 | <0.2 |
|  | 2 <0.2 <0 | <0.2 |
| TP13 0.4   |           | -    |
| TP14 0.1   |           | -    |
| Kyeemagh Infants School     TP14 0.7   |           | -    |
| TP15 0.1   |           | -    |
|  | 2 <0.2 <0 | <0.2 |
| TP16 0.1 17/11/2018  |           | -    |
| TP16 0.8   |           | -    |
| TP17 0.1   |           | -    |
| TP17 0.5   |           | -    |
| TP18_0.1<br>   | 2 <0.2 <0 | <0.2 |
| TP18 0.4   |           | -    |
| TP19 0.1   |           | -    |
| TP19_0.3   |           | -    |
|  | 2 <0.2 <0 | <0.2 |
| BH02 0.5   |           | -    |
| BH2 1.0 17/11/2018   |           | -    |
| BH03_0.5   |           | -    |
| <u>BH4 0.4</u> <u>-</u>   |           | -    |
| BH05 0.2-0.5   |           | -    |
| TP03 ASB1  |           | -    |
| TP04 0.4   |           | -    |
| ASB2 17/11/2018  |           | -    |
| TP12_0.2 QA100 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0   | 2 <0.2 <0 | <0.2 |
| TP12 0.2 QA200 10/11/2018 <0.05 <0.05 - <0.2 - <0.2 - <0.2 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 - <0.05 |           | -    |
| TP16 0.1     QA300     -   |           | -    |
| TP16_0.1 QA400 17/11/2018  |           | -    |

| Maximum Concentration | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <2 | <0.2 | <2 | <0.2 | <0.05 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
|-----------------------|------|------|------|------|------|------|------|----|------|----|------|-------|------|------|------|------|------|
| Average Concentration | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <2 | <0.2 | <2 | <0.2 | <0.05 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| Standard Deviation    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0  | 0    |       | 0    | 0    | 0    | 0    | 0    |



|   |                     |                  |                      | Solvent | S              |                  |               |                  | F          | Pesticide | es                |                 |               |               | Poly          | chlorina      | ted Biph      | enyls         |               |                     |
|---|---------------------|------------------|----------------------|---------|----------------|------------------|---------------|------------------|------------|-----------|-------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------------|
|   | Methyl Ethyl Ketone | 2-hexanone (MBK) | 4-Methyl-2-pentanone | Acetone | Allyl chloride | Carbon disulfide | Vinyl acetate | Demeton-S-methyl | Fenamiphos | Parathion | Pirimiphos-methyl | Pirimphos-ethyl | Arochlor 1016 | Arochlor 1221 | Arochlor 1232 | Arochlor 1242 | Arochlor 1248 | Arochlor 1254 | Arochlor 1260 | PCBs (Sum of total) |
|   | mg/kg               | mg/kg            | mg/kg                | mg/kg   | mg/kg          | mg/kg            | mg/kg         | mg/kg            | mg/kg      | mg/kg     | mg/kg             | mg/kg           | mg/kg         | mg/kg         | mg/kg         | mg/kg         | mg/kg         | mg/kg         | mg/kg         | mg/kg               |
| LOR   | 0.5                 | 5                | 0.5                  | 0.5     | 0.5            | 0.5              | 5             | 0.05             | 0.05       | 0.2       | 0.2               | 0.05            | 0.1           | 0.1           | 0.1           | 0.1           | 0.1           | 0.1           | 0.1           | 0.1                 |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |                     |                  |                      |         |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |                     |                  |                      |         |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m |                     |                  |                      |         |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |                     |                  |                      |         |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |
| NEPM 2013 HIL, Residential A  |                     |                  |                      |         |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               | 1                   |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |                     |                  |                      |         |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |
| 0-1m  |                     |                  |                      |         |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |
| 1-2m  |                     |                  |                      |         |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |
| 2-4m  |                     |                  |                      |         |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |
|   |                     |                  |                      |         |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |

| Site                    | Location | Field ID         | Sample Date |          |    |       |       |      |       |    |          |       |             |             |       |      |      |             |             |      |          |          |             |
|-------------------------|----------|------------------|-------------|----------|----|-------|-------|------|-------|----|----------|-------|-------------|-------------|-------|------|------|-------------|-------------|------|----------|----------|-------------|
|                         | TP       | 01_0.2           |             | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | -        | -           |
|                         | TP       | 01_0.9           |             | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | -        | -           |
|                         | TP       | 02_0.1           |             | -        | -  | -     | -     | -    | -     | -  | -        | -     | <0.2        | <0.2        | -     | <0.1 | <0.1 | <0.1        | <0.1        | <0.1 | <0.1     | <0.1     | <0.1        |
|                         | TP       | 02_0.4           |             | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | -        | -           |
|                         | TP       | 03_0.2           | -           | -        | -  | -     | -     | -    | -     | -  | -        | -     | <0.2        | <0.2        | -     | <0.1 | <0.1 | <0.1        | <0.1        | <0.1 | <0.1     | <0.1     | <0.1        |
|                         | TP       | 03_1.2           | _           | <0.5     | -  | <0.5  | <0.5  | <0.5 | <0.5  | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | -        | -           |
|                         | TP       | 04_0.1           | -           | -        | -  | -     | -     | -    | -     | -  | -        | -     | <0.2        | <0.2        | -     | <0.1 | <0.1 | <0.1        | <0.1        | <0.1 | <0.1     | <0.1     | <0.1        |
|                         | TP       | 05 0.1           | 1           | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | -        | -           |
|                         | TP       |                  | -           | <0.5     | -  | <0.5  | <0.5  | <0.5 | <0.5  | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | -        | -           |
|                         | ТР       |                  |             | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | -        | -           |
|                         | TP       | <br>06_0.3       | 10/11/2018  | <0.5     | -  | <0.5  | <0.5  | <0.5 | <0.5  | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | -        | -           |
|                         | ТР       | 07 0.1           | -           | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | -        | -           |
|                         | TP       | 07_0.4           | -           | -        | -  | -     | _     | _    | -     | _  |          | -     | -           | -           | -     | -    | -    | -           | -           | _    | -        | -        | -           |
|                         | ТР       | 07_06            | -           | -        | _  | -     | _     | _    | -     | _  | -        | -     | -           | -           | _     | -    | _    | -           | _           | _    | -        | -        | _           |
|                         | ТР       | 08 0 4           | -           | < 0.5    | -  | < 0.5 | < 0.5 | <0.5 | < 0.5 | _  |          | -     | -           | -           | -     | -    | -    | -           | -           | _    | -        | -        | -           |
|                         | ТР       | 09.03            | -           | -        | -  | -     | -     | -    | -     | _  | <u> </u> | -     | -           | -           |       | -    | -    | -           | _           | _    | -        | -        | -           |
|                         | ТР       | 10 0 1           | -           |          |    |       |       |      | _     |    | <u> </u> |       | -           | -           |       |      |      |             |             |      | <u> </u> |          |             |
|                         | ТР       | 10_0.1           | -           |          |    |       |       |      | -     |    |          |       | <0.2        | <0.2        |       | <01  | <01  | <01         | <01         | <01  | <01      | <01      | <01         |
|                         |          | 11_0.2<br>11_1_2 | -           | <05      |    | - 0 5 | - 0 5 |      |       |    |          | -     | <b>\U.2</b> | <b>\0.2</b> | _     | <0.1 | <0.1 | <b>\0.1</b> | <b>\0.1</b> | <0.1 | <0.1     | <0.1     | <b>\U.1</b> |
|                         |          | 11_1.2           | -           | <0.5     | -  | <0.5  | <0.5  | <0.5 | <0.5  | -  | <u> </u> | -     |             |             | -     | 0 1  |      | 0 1         | 0 1         | -01  | -01      |          | -01         |
|                         |          | 12_0.2           |             | -        | -  | -     | -     | -    | -     | -  |          | -     | <0.2        | <0.2        | -     | <0.1 | <0.1 | <0.1        | <0.1        | <0.1 | <0.1     | <0.1     | <0.1        |
|                         |          | 13_0.1           | -           | <0.5     | -  | <0.5  | <0.5  | <0.5 | <0.5  | -  | -        | -     | <0.2        | <0.2        | -     | <0.1 | <0.1 | <0.1        | <0.1        | <0.1 | <0.1     | <0.1     | <0.1        |
|                         |          | 13_0.4           | _           | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    |          | '        |             |
| Kusanash Infanta Cabaal |          | 14_0.1           | _           | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    |          |          |             |
| Kyeemagn Infants School |          | 14_0.7           | _           | <0.5     | -  | <0.5  | <0.5  | <0.5 | <0.5  | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    |          |          | -           |
|                         |          | 15_0.1           | _           | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | -        | -           |
|                         |          | 15_0.6           | 17/11/2018  | <0.5     | -  | <0.5  | <0.5  | <0.5 | <0.5  | -  |          | -     | <0.2        | <0.2        | -     | <0.1 | <0.1 | <0.1        | <0.1        | <0.1 | <0.1     | <0.1     | <0.1        |
|                         |          | 16_0.1           | _           | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        |          | -           |
|                         |          | 16_0.8           | _           | <0.5     | -  | <0.5  | <0.5  | <0.5 | <0.5  | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        |          | -           |
|                         | TP       | 17_0.1           | _           | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        |          | -           |
|                         | TP       | 17_0.5           | _           | <0.5     | -  | <0.5  | <0.5  | <0.5 | <0.5  | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | -        | -           |
|                         | ТР       | 18_0.1           | _           | -        | -  | -     | -     | -    | -     | -  | -        | -     | <0.2        | <0.2        | -     | <0.1 | <0.1 | <0.1        | <0.1        | <0.1 | <0.1     | <0.1     | <0.1        |
|                         | TP       | 18_0.4           |             | <0.5     | -  | <0.5  | <0.5  | <0.5 | <0.5  | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | <u> </u> | -           |
|                         | TP       | 19_0.1           | 10/11/2018  | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    |          | <u> </u> | -           |
|                         | TP       | 19_0.3           |             | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | - '      | -           |
|                         | TP       | 20_0.1           | _           | -        | -  | -     | -     | -    | -     | -  | -        | -     | <0.2        | <0.2        | -     | <0.1 | <0.1 | <0.1        | <0.1        | <0.1 | <0.1     | <0.1     | <0.1        |
|                         | BH       | 02_0.5           | 17/11/2018  | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | - '      | -           |
|                         | Bł       | 12_1.0           |             | <0.5     | -  | <0.5  | <0.5  | <0.5 | <0.5  | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        |          | -           |
|                         | BH       | 03_0.5           |             | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | '        | -           |
|                         | Bł       | 14_0.4           |             | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | <u> </u> | -           |
|                         | BHO      | 5_0.2-0.5        | 10/11/2018  | <0.5     | -  | <0.5  | <0.5  | <0.5 | <0.5  | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | <u> </u> | -           |
|                         | ТРО      | 3_ASB1           |             | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | <u> </u> | -           |
|                         | TP       | 04_0.4           |             | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | -        | -           |
|                         |          | ASB2             | 17/11/2018  | <u> </u> | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    |          | <u> </u> | -           |
|                         | TP12_0.2 | QA100            | 10/11/2018  | <0.5     | -  | <0.5  | <0.5  | <0.5 | <0.5  | -  | -        | -     | <0.2        | <0.2        | -     | <0.1 | <0.1 | <0.1        | <0.1        | <0.1 | <0.1     | <0.1     | <0.1        |
|                         | TP12_0.2 | QA200            | 10/11/2010  | <5       | <5 | <5    | -     | -    | <0.5  | <5 | <0.05    | <0.05 | <0.2        | -           | <0.05 | -    | -    | -           | -           | -    | -        | <u> </u> | <0.1        |
|                         | TP16_0.1 | QA300            | 17/11/2018  | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | <u> </u> | <u> </u>    |
| L                       | TP16_0.1 | QA400            | 17/11/2010  | -        | -  | -     | -     | -    | -     | -  | -        | -     | -           | -           | -     | -    | -    | -           | -           | -    | -        | -        | -           |

| Maximum Concentration | <5 | <5 | <5 | <0.5 | <0.5 | <0.5 | <5 | <0.05 | <0.05 | <0.2 | <0.2 | <0.05 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
|-----------------------|----|----|----|------|------|------|----|-------|-------|------|------|-------|------|------|------|------|------|------|------|------|
| Average Concentration | <5 | <5 | <5 | <0.5 | <0.5 | <0.5 | <5 | <0.05 | <0.05 | <0.2 | <0.2 | <0.05 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Standard Deviation    | 1  |    | 1  | 0    | 0    | 0    |    |       |       | 0    | 0    |       | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |

| Location  | Donth (m)                             | Date                                  | Filling (F) /                         | Motorial Turo                                  | рН <sub>F</sub>      | рН <sub>FOX</sub> | рН <sub>F</sub> -<br>pH <sub>FOX</sub> | Reaction           | pH kcl        | Peroxide<br>pH  | ТРА              | TSA              | Peroxide<br>Oxidisable<br>Sulfur | Chromium<br>Reducible<br>Sulfur | Acid<br>Neutralising<br>Capacity | Acid<br>Trail       | Net<br>Acidity | Liming<br>rate |
|---|---------------------------------------|---------------------------------------|---------------------------------------|--|----------------------|-------------------|--|--------------------|---------------|-----------------|------------------|------------------|----------------------------------|---------------------------------|----------------------------------|---------------------|----------------|----------------|
| Location  | Deptin (iii)                          | Sampled                               | Natural (N)                           | Material Type                                  | pH units             | pH units          | pH units                               | Rate               | pH units      | pH Units        | mol H+/t         | mol H+/t         | %S                               | %S                              | %S                               | TAA<br>Mole<br>H+/t | %S             | kg<br>CaCO₃/t  |
| BH01_1.0-1.45                                   | 1.0-1.45                              | 10/11/2018                            | F                                     | Silty Sand                                     | 6.4                  | 4.2               | 2.2                                    | 1                  | 5.8           | 4.8             | <2               | <0.02            | <0.02                            | <0.005                          | n/a                              | 3                   | <0.02          | <1             |
| BH01_2.5-2.95                                   | 2.5-2.95                              | 10/11/2018                            | Ν                                     | Silty Sand                                     | 6.3                  | 4.8               | 1.5                                    | 1                  | -             | -               | -                | -                | -                                | -                               | -                                | -                   | -              | -              |
| BH01_3.0-3.45                                   | 3.0-3.45                              | 10/11/2018                            | Ν                                     | Silty Sand                                     | 7.1                  | 5.7               | 1.4                                    | 1                  | -             | -               | -                | -                | -                                | -                               | -                                | -                   | -              | -              |
| BH01_4.0-4.45                                   | 4.0-4.45                              | 10/11/2018                            | N                                     | Silty Sand                                     | 6.7                  | 5                 | 1.7                                    | 1                  | -             | -               | -                | -                | -                                | -                               | -                                | -                   | -              | -              |
| BH01_5.5-5.95                                   | 5.0-5.95                              | 10/11/2018                            | Ν                                     | Sand   | 9.2                  | 7.7               | 1.5                                    | 1                  | -             | -               | -                | -                | -                                | -                               | -                                | -                   | -              | -              |
| BH01_7.0-7.45                                   | 7.0-7.45                              | 10/11/2018                            | Ν                                     | Silty Clay                                     | 9                    | 5.1               | 3.9                                    | 2                  | -             | -               | -                | -                | -                                | -                               | -                                | -                   | -              | -              |
| BH01_8.5-8.95                                   | 8.5-8.95                              | 10/11/2018                            | Ν                                     | Sandy Clay                                     | 8.9                  | 4.2               | 4.7                                    | 3                  | 9             | 7.3             | <2               | <2               | 0.4                              | 0.34                            | 0.90                             | <2                  | <0.02          | <1             |
| BH01_10.0-10.45                                 | 10.0-10.45                            | 10/11/2018                            | Ν                                     | Clayey Sand                                    | 9.2                  | 4.3               | 4.9                                    | 3                  | 9.2           | 7               | <2               | <2               | 0.15                             | 0.16                            | 0.40                             | <2                  | <0.02          | <1             |
| BH01_11.0-11.45                                 | 11.0-11.45                            | 10/11/2018                            | Ν                                     | Clayey Sand                                    | 8.5                  | 7.1               | 1.4                                    | 1                  | -             | -               | -                | -                | -                                | -                               | -                                | -                   | -              | -              |
| BH01_13.0-13.45                                 | 13.0-13.45                            | 10/11/2018                            | Ν                                     | Sand   | 8.3                  | 5.2               | 3.1                                    | 4                  | -             | -               | -                | -                | -                                | -                               | -                                | -                   | -              | -              |
| BH01_14.5-14.95                                 | 14.5-14.95                            | 10/11/2018                            | Ν                                     | Sand   | 8.2                  | 5.8               | 2.4                                    | 1                  | -             | -               | -                | -                | -                                | -                               | -                                | -                   | -              | -              |
| BH01_16.0-16.45                                 | 16.0-16.45                            | 10/11/2018                            | Ν                                     | Sand   | 6.9                  | 3.1               | 3.8                                    | 2                  | 5.5           | 4.4             | 47               | 40               | 0.07                             | 0.05                            | n/a                              | 7                   | 0.06           | 2.9            |
| BH02_2.0-2.45                                   | 2.0-2.45                              | 17/11/2018                            | N                                     | Silty Sand                                     | 7.8                  | 6.1               | 1.7                                    | 1                  | -             | -               | -                | -                | -                                | -                               | -                                | -                   | -              | -              |
| BH02_4.0-4.45                                   | 4.0-4.45                              | 17/11/2018                            | Ν                                     | Sand   | 6.8                  | 5.2               | 1.6                                    | 1                  | 5.9           | 7.2             | <2               | <2               | 0.24                             | <0.005                          | n/a                              | <2                  | <0.02          | <1             |
| BH02_5.5-5.95                                   | 5.5-5.95                              | 17/11/2018                            | Ν                                     | Sand   | 9.6                  | 7.5               | 2.1                                    | 1                  | -             | -               | -                | -                | -                                | -                               | -                                | -                   | -              | -              |
| BH02_7.0-7.45                                   | 7.0-7.45                              | 17/11/2018                            | Ν                                     | Sand   | 8.8                  | 6.2               | 2.6                                    | 4                  | 9.1           | 7.2             | <2               | <2               | 0.06                             | 0.13                            | 0.56                             | <2                  | <0.02          | <1             |
| BH02_8.5-8.95                                   | 8.5-8.95                              | 17/11/2018                            | Ν                                     | Sandy Clay                                     | 8.6                  | 5.9               | 2.7                                    | 4                  | -             | -               | -                | -                | -                                | -                               | -                                | -                   | -              | -              |
| BH02_10.0-10.45                                 | 10.0-10.45                            | 17/11/2018                            | Ν                                     | Sandy Clay                                     | 9.1                  | 5.1               | 4                                      | 4                  | -             | -               | -                | -                | -                                | -                               | -                                | -                   | -              | -              |
| BH02_11.5-11.95                                 | 11.5-11.95                            | 17/11/2018                            | Ν                                     | Sandy Clay                                     | 9                    | 4.5               | 4.5                                    | 4                  | 9.3           | 7.4             | <2               | <2               | 0.09                             | 0.082                           | 0.31                             | <2                  | <0.02          | <1             |
| BH02_13.0-13.45                                 | 13.0-13.45                            | 17/11/2018                            | Ν                                     | Sandy Clay                                     | 8.2                  | 7.9               | 0.3                                    | 4                  | -             | -               | -                | -                | -                                | -                               | -                                | -                   | -              | -              |
| BH02_14.5-14.95                                 | 14.5-14.95                            | 17/11/2018                            | Ν                                     | Sand   | 8.8                  | 6.7               | 2.1                                    | 1                  | -             | -               | -                | -                | -                                | -                               | -                                | -                   | -              | -              |
| BH02_16.0-16.45                                 | 16.0-16.45                            | 17/11/2018                            | Ν                                     | Sandy Clay                                     | 6.9                  | 6.4               | 0.5                                    | 4                  | -             | -               | -                | -                | -                                | -                               | -                                | -                   | -              | -              |
| BH02_17.5-17.95                                 | 17.5-17.95                            | 17/11/2018                            | Ν                                     | Clayey Sand                                    | 6.2                  | 5.6               | 0.6                                    | 4                  | -             | -               | -                | -                | -                                | -                               | -                                | -                   | -              | -              |
|   | Guideline                             | Value                                 |                                       | Eurofins LOR                                   | -                    | -                 | -                                      | -                  | 0.1           | 0.1             | 2                | 2                | 0.02                             | 0.005                           | 0.02                             | 2                   | 0.02           | 1              |
| ASSMAC (1998) P                                 | otential Acid                         | Sulfate Soil Ir                       | ndicator Value                        |  | 4 - 5.5 <sup>1</sup> | < 4 <sup>3</sup>  | 1 4                                    | -                  | -             | -               |                  |                  |                                  | -                               | -                                | -                   |                | -              |
| ASSMAC (1998) A                                 | ctual Acid Su                         | Ifate Soil Indi                       | cator Value                           |  | ≤ 4 <sup>2</sup>     | -                 | -                                      | -                  | -             | -               |                  |                  |                                  | -                               | -                                | -                   | - 1            | -              |
| ASSMAC (1998) A                                 | ction Criteria                        | - Coarse Soil                         | s (1 - 1000 to                        | nnes) 5  | -                    | -                 | -                                      | -                  | -             | -               | 18               | 18               | 0.03                             | 0.03                            | -                                | 18                  | 0.03           | -              |
| ASSMAC (1998) A                                 | ction Criteria                        | - Medium Soi                          | ils (1 - 1000 to                      | onnes) <sup>6</sup>                            | -                    | -                 | -                                      | -                  | -             | -               | 36               | 36               | 0.06                             | 0.06                            | -                                | 36                  | 0.06           | -              |
| ASSMAC (1998) A                                 | ction Criteria                        | - Fine Soils (                        | 1 - 1000 tonne                        | es) <sup>7</sup>                               | -                    | -                 | -                                      | -                  | -             | -               | 62               | 62               | 0.10                             | 0.10                            | -                                | 62                  | 0.10           | -              |
| ASSMAC (1998) A                                 | ction Criteria                        | - Coarse Soil                         | s (>1000 tonn                         | es) 5  | -                    | -                 | -                                      | -                  | -             | -               | 18               | 18               | 0.03                             | 0.03                            | -                                | 18                  | 0.03           | -              |
| ASSMAC (1998) A                                 | ction Criteria                        | - Medium Soi                          | ils (>1000 ton                        | nes) <sup>6</sup>                              | -                    | -                 | -                                      | -                  | -             | -               | 18               | 18               | 0.03                             | 0.03                            | -                                | 18                  | 0.03           | -              |
| ASSMAC (1998) A                                 | ction Criteria                        | - Fine Soils (:                       | >1000 tonnes)                         | ) 7  | -                    | -                 | -                                      | -                  | -             | -               | 18               | 18               | 0.03                             | 0.03                            | -                                | 18                  | 0.03           | -              |
| Notes to Table:                                 |                                       |                                       |                                       |  | -                    |                   |  |                    |               |                 |                  |                  |                                  |                                 |                                  |                     |                |                |
| 1 - pH values >4 and <                          | <5.5 are acid an                      | d may be the res                      | sult of some prev                     | vious or limited oxidation                     | on of sulfides,      | but is not conf   | irmatory of act                        | ual acid sulfate   | soils         |                 |                  |                  |                                  |                                 |                                  |                     |                |                |
| 2 - pH readings of pH                           | ≤4, indicates tha                     | t actual acid sul                     | fate soils are pre                    | esent with the sulfides                        | having been c        | oxidized in the p | oast, resulting                        | in acid soils (and | d soil pore w | vater)          |                  |                  |                                  |                                 |                                  |                     |                |                |
| 3 - The lower the final                         | pH <sub>FOX</sub> value is,           | the better the in-                    | dication of a pos                     | itive result.                                  | tainty of a note     | antial acid culfa | te soils. The n                        | oore the pH        | trops below   | 3 the more of   | ositivo the prov | sence of sulfic  |                                  |                                 |                                  |                     |                |                |
| » A pH <sub>FOX</sub> 3-4 is less $\mu$         | positive and labo                     | pratory analyses                      | are needed to c                       | onfirm if sulfides are p                       | resent.              |                   |  |                    |               | o, the more p   |                  |                  | 163.                             |                                 |                                  |                     |                |                |
| » For pH <sub>FOX</sub> 4-5 the te              | est is neither pos                    | itive nor negativ                     | e. Sulfides may l                     | be present either in sm                        | nall quantities      | and be poorly r   | eactive under                          | quick test field c | onditions.    |                 |                  |                  |                                  |                                 |                                  |                     |                |                |
| » For $pH_{FOX} > 5$ and lite                   | tle or no drop in                     | pH from the fiel                      | d value, little net                   | acid generating ability                        | is indicated.        |                   |  |                    |               |                 |                  |                  |                                  |                                 |                                  |                     |                |                |
| 4 - If the $pH_F$ value is a                    | at least one unit                     | below field pH <sub>FC</sub>          | <sub>DX</sub> , it may indicat        | e potential acid sulfate                       | soils. The gre       | eater the differe | ence between t                         | he two measure     | ments, the r  | more indicative | e the value is o | of a potential a | cid sulfate soils.               |                                 |                                  |                     |                |                |
| 5 - coarse soils compr<br>6 - Medium soils comp | rise sands to loa<br>prise sandy loam | my sands - App<br>ns to light clays · | roximate clay co<br>- Approximate cla | ntent (% < 0.002mm) :<br>ay content (% < 0.002 | ≤ 5%<br>mm) between  | 5 and 40%         |  |                    |               |                 |                  |                  |                                  |                                 |                                  |                     |                |                |

7 - Fine soils comprise medium to heavy clays and silty clays - Approximate clay content (% < 0.002mm)  $\ge 40\%$ 

8 - NT - Not Tested

9 - 1.0; No reaction to slight. 2.0; Moderate reaction. 3.0; Strong reaction with persistent froth. 4.0; Extreme reaction.

| B                       |   |
|-------------------------|---|
| Liming Rate: A Safety   | Factor of 1.5 has been incorporated to account for the mixing process   |
| Acid Trail / Net Acidit | y - Indicates acidic soils, however may not indicate Acid Sulfate Soils   |
| Contaminant Exceeda     | ance Indicators:  |
| Bold                    | Indicates the laboratory result is within the specified range of the ASSMAC (1998) Actual Acid Sulfate Soil Indicator Values                                    |
| Italics                 | Indicates the laboratory result either exceeds or is within the specified range of the ASSMAC (1998) Potential Acid Sulfate Soil Indicator Values               |
|                         | Indicates exceedance of the ASSMAC (1998) Action Criteria triggering the need to prepare a ASS Management Plan  |
|                         | Indicates the requirement for localised lime treatment of the material, that is, when the laboratory results for SCr (%w/w) > 0.03 and the SCr (mole H=/t) > 18 |

| Location   | Depth (m)  | Date  | Filling (F) /   | Material Type  | рН <sub>F</sub>  | рН <sub>FOX</sub>  | рН <sub>F</sub> -<br>pН <sub>FOX</sub>             | Reaction  | pH kcl  | Peroxide<br>pH                              | ТРА                   | TSA             | Peroxide<br>Oxidisable<br>Sulfur | Chromium<br>Reducible<br>Sulfur | Acid<br>Neutralising<br>Capacity | Acid<br>Trail       | Net<br>Acidity | Liming<br>rate |
|--|--|---|---|--|--|--|--|---|---|---|-----------------------|-----------------|----------------------------------|---------------------------------|----------------------------------|---------------------|----------------|----------------|
| Location   |  | Sampled   | Natural (N)   |  | pH units   | pH units   | pH units   | Rate  | pH units  | pH Units                                    | mol H+/t              | mol H+/t        | %S                               | %S                              | %S                               | TAA<br>Mole<br>H+/t | %S             | kg<br>CaCO₃/t  |
| BH03_1.0-1.1   | 1.0-1.1  | 17/11/2018  | F   | Sand   | 6.4  | 5  | 1.4  | 1   | -   | -   | -                     | -               | -                                | -                               | -                                | -                   | -              | -              |
| BH03_2.5-2.95  | 2.5-2.95   | 17/11/2018  | Ν   | Sand   | 6.8  | 5  | 1.8  | 2   | -   | -   | -                     | -               | -                                | -                               | -                                | -                   | -              | -              |
| BH03_4.0-4.45  | 4.0-4.45   | 17/11/2018  | Ν   | Sand   | 9.3  | 7.4  | 1.9  | 1   | -   | -   | -                     | -               | -                                | -                               | -                                | -                   | -              | -              |
| BH03_5.5-5.95  | 5.5-5.95   | 17/11/2018  | Ν   | Sand   | 9.4  | 7.5  | 1.9  | 1   | -   | -   | -                     | -               | -                                | -                               | -                                | -                   | -              | -              |
| BH03_7.0-7.45  | 7.0-7.45   | 17/11/2018  | Ν   | Sand   | 9  | 7  | 2  | 2   | -   | -   | -                     | -               | -                                | -                               | -                                | -                   | -              | -              |
| BH03_8.5-8.95  | 8.5-8.95   | 17/11/2018  | Ν   | Sandy Clay   | 9.1  | 6.2  | 2.9  | 4   | 9.3   | 7.5   | <2                    | <2              | 0.35                             | 0.29                            | 1.00                             | <2                  | <0.02          | <1             |
| BH03_10.0-10.45  | 10.0-10.45   | 17/11/2018  | N   | Sandy Clay   | 8.9  | 2.3  | 6.6  | 4   | 8.2   | 2.6   | 210                   | 210             | 0.48                             | 0.35                            | 0.24                             | <2                  | 0.19           | 8.8            |
| BH03_11.5-11.95  | 11.5-11.95   | 17/11/2018  | N   | Sand   | 8.1  | 4.4  | 3.7  | 2   | -   | -   | -                     | -               | -                                | -                               | -                                | -                   | -              | -              |
| BH03_13.0-13.45  | 13.0-13.45   | 17/11/2018  | N   | Sand   | 8.3  | 6.1  | 2.2  | 2   | -   | -   | -                     | -               | -                                | -                               | -                                | -                   | -              | -              |
| BH04_0.5-0.95  | 0.5-0.95   | 10/11/2018  | F   | Sand   | 6.2  | 3.9  | 2.3  | 1   | 6.7   | 4.9   | <2                    | <2              | <0.02                            | <0.005                          | 0.09                             | <2                  | <0.02          | <1             |
| BH04_2.0-2.45  | 2.0-2.45   | 10/11/2018  | N   | Silty Sand   | 4.9  | 3.3  | 1.6  | 1   | 5.7   | 4.4   | <2                    | <2              | <0.02                            | <0.005                          | n/a                              | 3                   | <0.02          | <1             |
| BH04_3.0-3.45  | 3.0-3.45   | 10/11/2018  | N   | Silty Sand   | 5.5  | 3.4  | 2.1  | 1   | -   | -   | -                     | -               | -                                | -                               | -                                | -                   | -              | -              |
| BH05_1.5-1.95  | 1.5-1.95   | 10/11/2018  | N   | Silty Sand   | 5.6  | 3.5  | 2.1  | 1   | 5.7   | 4.9   | <2                    | <2              | <0.02                            | <0.005                          | n/a                              | 3                   | <0.02          | <1             |
| BH05_4.5-4.95  | 4.5-4.95   | 11/11/2018  | N   | Sand   | 6.5  | 5  | 1.5  | 1   | -   | -   | -                     | -               | -                                | -                               | -                                | -                   | -              | -              |
|  | Guideline  | Value   |   | Eurofins LOR   | -  | -  | -  | -   | 0.1   | 0.1   | 2                     | 2               | 0.02                             | 0.005                           | 0.02                             | 2                   | 0.02           | 1              |
| ASSMAC (1998) F  | Potential Acid   | Sulfate Soil Ir   | dicator Value   |  | 4 - 5.5 <sup>1</sup>   | < 4 <sup>3</sup>   | 1 4  | -   | -   | -   |                       |                 |                                  | -                               | -                                | -                   | -              | -              |
| ASSMAC (1998) A  | ctual Acid Su  | Ifate Soil Indi   | cator Value   |  | $\leq 4^2$   | -  | -  | -   | -   | -   |                       |                 |                                  | -                               | -                                | -                   | -              | -              |
| ASSMAC (1998) A  | ction Criteria   | - Coarse Soil   | s (1 - 1000 to  | nnes) 5  | -  | -  | -  | -   | -   | -   | 18                    | 18              | 0.03                             | 0.03                            | -                                | 18                  | 0.03           | -              |
| ASSMAC (1998) A  | ction Criteria   | - Medium So   | ils (1 - 1000 to  | onnes) <sup>6</sup>  | -  | -  | -  | -   | -   | -   | 36                    | 36              | 0.06                             | 0.06                            | -                                | 36                  | 0.06           | -              |
| ASSMAC (1998) A  | ction Criteria   | - Fine Soils (  | 1 - 1000 tonne  | es) <sup>7</sup>   | -  | -  | -  | -   | -   | -   | 62                    | 62              | 0.10                             | 0.10                            | -                                | 62                  | 0.10           | -              |
| ASSMAC (1998) A  | ction Criteria   | - Coarse Soil   | s (>1000 tonr   | nes) 5   | -  | -  | -  | -   | -   | -   | 18                    | 18              | 0.03                             | 0.03                            | -                                | 18                  | 0.03           | -              |
| ASSMAC (1998) A  | ction Criteria   | - Medium So   | ils (>1000 ton  | nes) <sup>6</sup>  | -  | -  | -  | -   | -   | -   | 18                    | 18              | 0.03                             | 0.03                            | -                                | 18                  | 0.03           | -              |
| ASSMAC (1998) A  | ction Criteria   | - Fine Soils (:   | >1000 tonnes  | ) <sup>7</sup>   | -  | -  | -  | -   | -   | -   | 18                    | 18              | 0.03                             | 0.03                            | -                                | 18                  | 0.03           | -              |
| Notes to Table:  |  | · · · · ·   |   | ·  |  |  |  |   |   |   |                       |                 |                                  |                                 |                                  |                     |                |                |
| 1 - pH values >4 and   | l <5.5 are acid  | and may be the  | e result of some  | e previous or limited o  | oxidation of s   | ulfides, but is  | not confirmation                                   | tory of actual a                                      | cid sulfate   | soils                                       |                       |                 |                                  |                                 |                                  |                     |                |                |
| 2 - pH readings of pH<br>3 - The lower the fina<br>» If the pH <sub>FOX</sub> < 3 an<br>» A pH <sub>FOX</sub> 3-4 is less<br>» For pH <sub>FOX</sub> 4-5 the t<br>» For pH <sub>FOX</sub> >5 and l | H≤4, indicates t<br>al pH <sub>FOX</sub> value<br>d there was a s<br>a positive and la<br>test is neither p<br>little or no drop | that actual acid<br>is, the better th<br>strong reaction<br>aboratory analy<br>positive nor neg<br>in pH from the | sulfate soils ar<br>e indication of a<br>to the peroxide<br>ses are needed<br>ative. Sulfides<br>field value, littl | e present with the su<br>a positive result.<br>e, there is a high level<br>d to confirm if sulfides<br>may be present eithe<br>e net acid generating | Ifides having<br>l of certainty<br>s are present<br>r in small qua<br>g ability is ind | been oxidize<br>of a potential<br>antities and be<br>icated. | d in the past,<br>acid sulfate s<br>e poorly react | resulting in aci<br>oils. The more<br>ive under quick | d soils (and<br>the pH <sub>FOX</sub> c<br>< test field c | soil pore wa<br>Irops below 3<br>onditions. | ter)<br>3, the more p | ositive the pre | esence of sulfide                | S.                              |                                  |                     |                |                |
| 4 - If the pH <sub>F</sub> value is  | s at least one u   | nit below field   | pH <sub>FOX</sub> , it may in   | ndicate potential acid   | sulfate soils.   | The greater t  | he difference                                      | between the tw  | wo measure  | ements, the m                               | nore indicativ        | e the value is  | of a potential ac                | id sulfate soils.               |                                  |                     |                |                |
| 5 - coarse soils comp<br>6 - Medium soils com<br>7 - Fine soils compri   | prise sands to I<br>nprise sandy lo<br>se medium to b  | loamy sands - A<br>bams to light cla  | Approximate cla<br>lys - Approxima  | ay content (% < 0.002<br>ate clay content (% <   | 2mm) ≤ 5%<br>0.002mm) be<br>ent (% < 0.00  | etween 5 and<br>2mm) > 40%                                   | 40%  |   |   |   |                       |                 |                                  |                                 |                                  |                     |                |                |
| 8 - NT - Not Tested  |  | icavy clays and   | i siity clays - Ap  | proximate clay come  | ant (70 < 0.00   | 211111) = 40 %   |  |   |   |   |                       |                 |                                  |                                 |                                  |                     |                |                |
| 9 - 1.0: No reaction t   | o sliaht. 2.0: M   | oderate reactio   | on. 3.0: Strona i   | reaction with persiste   | nt froth. 4.0:   | Extreme reac   | tion.  |   |   |   |                       |                 |                                  |                                 |                                  |                     |                |                |
| Liming Rate: A Safet   | ty Factor of 1.5   | has been inco   | roorated to acc   | ount for the mixing p  | rocess   |  |  |   |   |   |                       |                 |                                  |                                 |                                  |                     |                |                |
| Acid Trail / Net Acidi   | ty - Indicates a   | cidic soils, how  | ever may not ir   | ndicate Acid Sulfate S   | Soils  |  |  |   |   |   |                       |                 |                                  |                                 |                                  |                     |                | -              |
| Contaminant Exceed   | ance Indicator   | <u>'S:</u>  |   |  |  |  |  |   |   |   |                       |                 |                                  |                                 |                                  |                     |                |                |
| Bold   | Indicates the la   | aboratory result  | t is within the s   | pecified range of the  | ASSMAC (19   | 998) Actual A  | cid Sulfate Sc                                     | bil Indicator Val                                     | ues   |   |                       |                 |                                  |                                 |                                  |                     |                |                |
| Italics  | Indicates the la   | aboratory result  | t either exceeds  | s or is within the spec  | cified range o   | f the ASSMA  | C (1998) Pote                                      | ential Acid Sulfa                                     | ate Soil Indi   | cator Values                                |                       |                 |                                  |                                 |                                  |                     |                |                |
|  | Indicates exce   | edance of the <i>i</i>  | ASSMAC (1998  | 3) Action Criteria triac   | ering the nee  | ed to prepare  | a ASS Manad  | gement Plan   |   |   |                       |                 |                                  |                                 |                                  |                     |                |                |
|  | Indicates the r  | equirement for  | localised lime t  | treatment of the mate  | erial, that is, v  | vhen the labo  | ratory results                                     | for SCr (%w/w   | ) > 0.03 and  | the SCr (mo                                 | ole H=/t) > 18        |                 |                                  |                                 |                                  |                     |                |                |
|  |  |   |   |  |  |  |  |   |   |   |                       |                 |                                  |                                 |                                  |                     |                |                |



|  |         |         |              | BTEX           |            |            |              |       |           | ТРН       |         |                              |           |                            |                            |                  | M              | AH                                    |                    |   |
|--|---------|---------|--------------|----------------|------------|------------|--------------|-------|-----------|-----------|---------|------------------------------|-----------|----------------------------|----------------------------|------------------|----------------|---------------------------------------|--------------------|---|
|  | Benzene | Toluene | Ethylbenzene | Xylene (m & p) | Xylene (o) | Total BTEX | Xylene Total | د · ع | C10 - C14 | C15 - C28 | C29-C36 | +C10 - C36 (Sum of<br>total) | Total MAH | 1,2,4-<br>trimethylbenzene | 1,3,5-<br>trimethylbenzene | lsopropylbenzene | n-butylbenzene | n-propylbenzene                       | p-isopropyltoluene |   |
|  | mg/kg   | mg/kg   | mg/kg        | mg/kg          | mg/kg      | mg/kg      | mg/kg        | mg/kg | mg/kg     | mg/kg     | mg/kg   | mg/kg                        | mg/kg     | mg/kg                      | mg/kg                      | mg/kg            | mg/kg          | mg/kg                                 | mg/kg              | 1 |
| EQL  | 0.1     | 0.1     | 0.1          | 0.2            | 0.1        | 0.2        | 0.3          | 10    | 20        | 50        | 50      | 50                           | 0.5       | 0.5                        | 0.5                        | 0.5              | 0.5            | 0.5                                   | 0.5                |   |
| NSW 2014 General Solid Waste CT1 (No Leaching)       | 10      | 288     | 600          |                |            |            | 1,000        | 650   |           |           |         | 10,000                       |           |                            |                            |                  |                |                                       |                    |   |
| NSW 2014 Restricted Solid Waste CT2 (No Leaching)    | 40      | 1,152   | 2,400        |                |            |            | 4,000        | 2,600 |           |           |         | 40,000                       |           |                            |                            |                  |                |                                       |                    |   |
| NGW 2014 Conserved Collid Master SCC1 (with loophed) | 10      | F10     | 1 000        |                |            |            | 1 000        | 00.0  |           |           |         | 10.000                       |           |                            |                            |                  |                | · · · · · · · · · · · · · · · · · · · |                    |   |

|                     |                                |         |         |              | BTEX           |            |            | •            |              |           | TPH           |            |                           |           | MAH                            |                            |                  |                |                 |                    |                  |         |                   |
|---------------------|--------------------------------|---------|---------|--------------|----------------|------------|------------|--------------|--------------|-----------|---------------|------------|---------------------------|-----------|--------------------------------|----------------------------|------------------|----------------|-----------------|--------------------|------------------|---------|-------------------|
|                     |                                | Benzene | Toluene | Ethylbenzene | Xylene (m & p) | Xylene (o) | Total BTEX | Xylene Total | - 99<br>- 99 | C10 - C14 | 517 C15 - C28 | c29-c36    | +C10 - C36 (Sum of total) | Total MAH | ی 1,2,4-<br>ج trimethylbenzene | 1,3,5-<br>trimethylbenzene | ksopropylbenzene | n-butylbenzene | n-propylbenzene | p-isopropyltoluene | sec-butylbenzene | Styrene | tert-butylbenzene |
| EOL                 |                                | 0.1     | 0.1     | 0.1          | 0.2            | 0.1        | 0.2        | 0.3          | 10           | 20        | 50            | 50         | 50                        | 0.5       | 0.5                            | 0.5                        | 0.5              | 0.5            | 0.5             | 0.5                | 0.5              | 0.5     | 0.5               |
| NSW 2014 General S  | olid Waste CT1 (No Leaching)   | 10      | 288     | 600          | 0.2            | 011        | 0.2        | 1.000        | 650          | 20        | 50            | 50         | 10.000                    | 010       | 015                            | 0.0                        | 010              | 015            | 015             | 0.0                | 0.0              | 60      | 0.5               |
| NSW 2014 Restricted | Solid Waste CT2 (No Leaching)  | 40      | 1,152   | 2,400        |                |            |            | 4,000        | 2,600        |           |               |            | 40,000                    |           |                                |                            |                  |                |                 |                    |                  | 240     |                   |
| NSW 2014 General S  | olid Waste SCC1 (with leached) | 18      | 518     | 1,080        |                |            |            | 1,800        | 6500         |           |               |            | 10,000                    |           |                                |                            |                  |                |                 |                    |                  | 108     |                   |
|                     | Data                           |         |         |              |                |            |            |              |              |           |               |            |                           |           |                                |                            |                  |                |                 |                    |                  |         |                   |
|                     | 17/11/2018                     | 1 -     | -       | -            | -              | -          | -          | -            | -            | -         | -             | -          | -                         | <u> </u>  | -                              |                            | -                | -              | -               | -                  | -                | -       | -                 |
| BH02 0.5            | 17/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
|                     | 17/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | <0.5      | <0.5                           | <0.5                       | <0.5             | -              | -               | -                  | -                | <0.5    | -                 |
| BH03_0.5            | 17/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| BH4_0.4             | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | 370           | 1,600      | 1,970                     | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP01 0 2            | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50<br>62  | <50<br>62                 | <0.5      | <0.5                           | <0.5                       | <0.5             | -              | -               | -                  | -                | <0.5    | -                 |
| TP01_0.9            | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP02_0.1            | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | 63            | 110        | 173                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP02_0.4            | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP03_0.2            | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | < 0.3        | <20          | <20       | <50           | <50        | <50                       | -         |                                | -<br>- 0 F                 | -                | -              | -               | -                  | -                | -       | -                 |
| TP03_1.2            | 10/11/2018                     | -       | -       | -            | -              | -          | -          | -            |              | -         |               | -          | -                         | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP04_0.1            | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP04_0.4            | 10/11/2018                     | -       | -       | -            | -              | -          | -          | -            | -            | -         | -             | -          | -                         | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP05_0.1            | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP05_0.9            | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | < 0.3        | <20          | <20       | <50           | <50        | <50                       | <0.5      | <0.5                           | <0.5                       | <0.5             | -              | -               | -                  | -                | <0.5    | -                 |
| TP06_0.1            | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <b>480</b> | <b>580</b>                | - <0.5    | - <0.5                         | <0.5                       | - <0.5           | -              | -               | -                  | -                | - <0.5  | -                 |
| TP07_0.1            | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP07_0.4            | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP07_0.6            | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP08_0.4            | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | <0.5      | <0.5                           | <0.5                       | <0.5             | -              | -               | -                  | -                | <0.5    | -                 |
| TP10_0.3            | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50<br>91  | <50<br>91                 | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP11_0.2            | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
|                     | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | 72            | 92         | 164                       | <0.5      | <0.5                           | <0.5                       | <0.5             | -              | -               | -                  | -                | <0.5    | -                 |
| TP12_0.2            | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP13_0.1            | 17/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | 70            | 290        | 360                       | <0.5      | <0.5                           | <0.5                       | <0.5             | -              | -               | -                  | -                | <0.5    | -                 |
| TP15_0.4            | 17/11/2018                     | -       | -       | -            | -              | -          | -          | -            | -            | -         | -             | -          | -                         | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP14_0.7            | 17/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | <0.5      | <0.5                           | <0.5                       | <0.5             | -              | -               | -                  | -                | <0.5    | -                 |
| TP15_0.1            | 17/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP15_0.6            | 17/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | <0.5      | <0.5                           | <0.5                       | <0.5             | -              | -               | -                  | -                | <0.5    | -                 |
| TP16_0.1            | 17/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP10_0.8            | 17/11/2018                     |         | -       | -            | -              | -          | -          | -            |              | -         |               |            | -                         |           | -                              |                            | -                | -              | -               | -                  | -                | -       | -                 |
| TP17_0.5            | 17/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | <0.5      | <0.5                           | <0.5                       | <0.5             | -              | -               | -                  | -                | <0.5    | -                 |
| TP18_0.1            | 17/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP18_0.4            | 17/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | <0.5      | <0.5                           | <0.5                       | <0.5             | -              | -               | -                  | -                | <0.5    | -                 |
| TP19_0.1            | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| TP20 0.1            | 17/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | -         | -                              | -                          | -                | -              | -               | _                  | -                | -       | -                 |
| QA100               | 10/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | <0.5      | <0.5                           | <0.5                       | <0.5             | -              | -               | -                  | -                | <0.5    | -                 |
| QA200               | 10/11/2018                     | <0.2    | <0.5    | <0.5         | <0.5           | <0.5       | <0.2       | <0.5         | <10          | <50       | <100          | <100       | <50                       | -         | <0.5                           | <0.5                       | <0.5             | <0.5           | <0.5            | <0.5               | <0.5             | <0.5    | <0.5              |
| QA300               | 17/11/2018                     | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | -          | <0.3         | <20          | <20       | <50           | <50        | <50                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       | -                 |
| QA400               | 17/11/2018                     | <0.2    | <0.5    | <0.5         | <0.5           | <0.5       | <0.2       | <0.5         | <10          | <50       | <100          | <100       | <50                       | -         | -                              | -                          | -                | -              | -               | -                  | -                | -       |                   |
| Number of Results   |                                | 43      | 43      | 43           | 43             | 43         | 2          | 43           | 41           | 41        | 41            | 41         | 41                        | 14        | 15                             | 15                         | 15               | 1              | 1               | 1                  | 1                | 15      | 1                 |
| Minimum Concentra   | tion                           | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | <0.2       | <0.3         | <10          | <20       | <50           | <50        | <50                       | <0.5      | <0.5                           | <0.5                       | <0.5             | <0.5           | <0.5            | <0.5               | <0.5             | <0.5    | <0.5              |
| Maximum Concentra   | tion                           | 83      | 82      | 82           | 83             | 84         | <0.2       | 84           | <20          | <50       | 370           | 1,600      | 1,970                     | <0.5      | <0.5                           | <0.5                       | <0.5             | <0.5           | <0.5            | <0.5               | <0.5             | <0.5    | <0.5              |
| Average Concentrat  | on *                           | 2       | 2       | 2            | 2              | 2          | 0.1        | 2.1          | 9.8          | 11        | 40            | 88         | 104                       | 0.25      | 0.25                           | 0.25                       | 0.25             | 1              | 1               | İ                  | İ                | 0.25    |                   |
| Standard Deviation  |                                | 13      | 12      | 12           | 13             | 13         | 0          | 13           | 1.1          | 3.3       | 55            | 256        | 316                       | 0         | 0                              | 0                          | 0                |                |                 |                    |                  | 0       |                   |



|                                 |                           |                | r                                   | r                                       |                      |              |                |            |                        |                | P                    | AH<br>م             |          |                             |              |          |                              |             |                     |              |        |                                  | Asbestos           | r  |
|---------------------------------|---------------------------|----------------|-------------------------------------|---|----------------------|--------------|----------------|------------|------------------------|----------------|----------------------|---------------------|----------|-----------------------------|--------------|----------|------------------------------|-------------|---------------------|--------------|--------|----------------------------------|--------------------|--|
|                                 |                           | BaP TEQ (zero) | Benzo(a)pyrene TEQ<br>중 (half LOR)_ | S Benzo(a)pyrene TEQ<br>(upper bound) * | Benzo(b+j)fluoranthe | Acenaphthene | Acenaphthylene | Anthracene | 8<br>Benz(a)anthracene | Benzo(a)pyrene | Benzo(g,h,i)perylene | Benzo(k)fluoranthen | Chrysene | bibenz(a,h)anthracen<br>중 e | Eluoranthene | Fluorene | lindeno(1,2,3-<br>c,d)pyrene | Maphthalene | PAHs (Sum of total) | Phenanthrene | Byrene | k Asbestos from ACM<br>는 in Soil | Asbestos from FA & | Asbestos Reported<br>Result                  |
| EQL                             |                           | 0.5            | 0.5                                 | NIG/KG                                  | 0.5                  | 0.5          | 0.5            | 0.5        | 0.5                    | 0.5            | 0.5                  | 0.5                 | 0.5      | 0.5                         | 0.5          | 0.5      | 0.5                          | 0.5         | 0.5                 | 0.5          | 0.5    | 70 <b>00/0</b> 0                 | 70 VV / VV         | comment                                      |
| NSW 2014 General Solid V        | Vaste CT1 (No Leaching)   |                |                                     |   |                      |              |                |            |                        | 0.8            |                      |                     |          |                             |              |          |                              |             | 200                 |              |        |                                  |                    |  |
| NSW 2014 Restricted Solid       | Waste CT2 (No Leaching)   |                |                                     |   |                      |              |                |            |                        | 3.2            |                      |                     |          |                             |              |          |                              |             | 800                 |              |        |                                  |                    |  |
| NSW 2014 General Solid V        | Vaste SCC1 (with leached) |                |                                     |   |                      |              |                |            |                        | 10             |                      |                     |          |                             |              |          |                              |             |                     |              |        |                                  |                    |  |
| Field ID                        | Date                      | -              |                                     |   |                      |              |                |            |                        |                |                      |                     |          |                             |              |          |                              |             |                     |              |        |                                  |                    |  |
| ASB2                            | 17/11/2018                | -              | -                                   | -                                       | -                    | -            | -              | -          | -                      | -              | -                    | -                   | -        | -                           | -            | -        | -                            | -           | -                   | -            | -      | -                                | -                  | Y  |
| BH02_0.5                        | 17/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | <0.001                           | <0.001             | N  |
| BH2_1.0<br>BH03 0.5             | 17/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | <0.001                           | <0.001             | N  |
| BH4 0.4                         | 10/11/2018                | 1.0            | 1.3                                 | 1.7                                     | 0.6                  | <0.5         | <0.5           | <0.5       | <0.5                   | 0.9            | <0.5                 | 0.8                 | <0.5     | <0.5                        | 0.6          | <0.5     | <0.5                         | <0.5        | 3.4                 | <0.5         | 0.5    | -                                | -                  | -  |
| BH05_0.2-0.5                    | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | -                                | -                  | -  |
| TP01_0.2                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | <0.001                           | <0.001             | N  |
| TP01_0.9                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | -                                | -                  | -  |
| TP02_0.1                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | <0.001                           | <0.001             | N  |
| TP02_0.4                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | <0.001                           | <0.001             | N  |
| TP03_0.2                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | <0.001                           | <0.001             | N  |
| TP03 ASB1                       | 10/11/2018                | -              | -                                   |   | -                    | -            | -              | -          | -                      | -              | -                    | -                   | -        | -                           | -            | -        | -                            | -           | -                   | -            | -      | -                                | -                  | Y  |
| TP04_0.1                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | < 0.001                          | < 0.001            | N  |
| TP04_0.4                        | 10/11/2018                | -              | -                                   | -                                       | -                    | -            | -              | -          | -                      | -              | -                    | -                   | -        | -                           | -            | -        | -                            | -           | -                   | -            | -      | 0.1908                           | <0.001             | Y  |
| TP05_0.1                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | <0.001                           | <0.001             | N  |
| TP05_0.9                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | -                                | -                  | -  |
| TP06_0.1                        | 10/11/2018                | < 0.5          | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | < 0.5          | <0.5       | < 0.5                  | < 0.5          | < 0.5                | <0.5                | < 0.5    | < 0.5                       | <0.5         | <0.5     | < 0.5                        | < 0.5       | < 0.5               | <0.5         | < 0.5  | < 0.001                          | <0.001             | N  |
| TP06_0.3                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | -                                | -                  | -<br>N                                       |
| TP07_0.1                        | 10/11/2018                | <0.5           | 0.0                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   |                                  | -                  | -  |
| TP07 0.6                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | -                                | -                  | -  |
| TP08_0.4                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | -                                | -                  | -  |
| TP09_0.3                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | <0.001                           | <0.001             | N  |
| TP10_0.1                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | -                                | -                  | -  |
| TP11_0.2                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | <0.001                           | <0.001             | N  |
| TP11_1.2                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | -                                | -                  | -<br>N                                       |
| TP12_0.2                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | <0.001                           | <0.001             | IN<br>N                                      |
| TP13_0.1                        | 17/11/2018                | -              |                                     | -                                       | -                    |              | -              |            | -                      | -              |                      | -                   |          | -                           |              |          |                              | -           |                     | -            | -      | <0.001                           | <0.001             | N  |
| TP14 0.1                        | 17/11/2018                | -              | -                                   | -                                       | -                    | -            | -              | -          | -                      | -              | -                    | -                   | -        | -                           | -            | -        | -                            | -           | -                   | -            | -      | < 0.001                          | <0.001             | N  |
| TP14_0.7                        | 17/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | -                                | -                  | -  |
| TP15_0.1                        | 17/11/2018                | 0.9            | 1.2                                 | 1.5                                     | <0.5                 | <0.5         | <0.5           | <0.5       | 1.1                    | 0.7            | <0.5                 | 0.7                 | 1.0      | <0.5                        | 1.3          | <0.5     | <0.5                         | <0.5        | 6.9                 | 0.8          | 1.3    | -                                | -                  | -  |
| TP15_0.6                        | 17/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | -                                | -                  |  |
| TP16_0.1                        | 17/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | < 0.5                | <0.5                | < 0.5    | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | -                                | -                  | -  |
| TP15_0.8                        | 17/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   |                                  | -                  | -<br>NI                                      |
| TP17_0.1                        | 17/11/2018                | -<br><0.5      | 0.6                                 | 12                                      | <0.5                 | - <0.5       | - <0.5         | - <0.5     | - <0.5                 | - <0.5         | -<br><0 5            | <0.5                | -<br><05 | - <0.5                      | - <0.5       | - <0.5   | - <0.5                       | - <0.5      | -<br><0 5           | <0.5         | - <0.5 |                                  |                    |  |
| TP18_0.1                        | 17/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | <0.001                           | <0.001             | N  |
| <br>TP18_0.4                    | 17/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | -                                | -                  | -  |
| TP19_0.1                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | <0.001                           | <0.001             | Ν  |
| TP19_0.3                        | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | <0.001                           | <0.001             | N  |
| TP20_0.1                        | 17/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | <0.001                           | <0.001             | N  |
| QA100                           | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   | -                                | -                  | -  |
| 04200                           | 10/11/2018                | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5<br><0 5           | <0.5<br><0 5   | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   |                                  | -                  | -  |
| QA400                           | 17/11/2018                | < 0.5          | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | <0.5   |                                  | -                  |  |
| <u></u>                         | , ,                       |                |                                     |   |                      | 5.5          | 5.5            | 5.5        |                        | 2.0            | 5.0                  | 1 0.0               | 5.5      | 5.5                         | 5.5          | 5.5      | 5.5                          | 5.5         |                     |              | 5.5    | 11                               |                    | <u>ا ا</u>                                   |
| Statistics<br>Number of Results |                           | 41             | 41                                  | 39                                      | 41                   | 41           | 41             | 41         | 41                     | 41             | 41                   | 41                  | 41       | 41                          | 41           | 41       | 41                           | 83          | 41                  | 41           | 41     | 25                               | 25                 | 25   |
| Minimum Concentration           |                           | <0.5           | 0.6                                 | 1.2                                     | <0.5                 | <0.5         | <0.5           | <0.5       | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5     | <0.5                        | <0.5         | <0.5     | <0.5                         | <0.5        | <0.5                | <0.5         | 0.5    | 0                                | 0                  | 1  |
| Maximum Concentration           |                           | 1              | 1.3                                 | 1.7                                     | 0.6                  | <0.5         | <0.5           | <0.5       | 1.1                    | 0.9            | <0.5                 | 0.8                 | 1        | <0.5                        | 1.3          | <0.5     | <0.5                         | <1          | 6.9                 | 0.8          | 1.3    | 0.1908                           | 0                  | 1  |
| Average Concentration *         |                           | 0.28           | 0.63                                | 1.2                                     | 0.26                 | 0.25         | 0.25           | 0.25       | 0.27                   | 0.28           | 0.25                 | 0.27                | 0.27     | 0.25                        | 0.28         | 0.25     | 0.25                         | 0.26        | 0.49                | 0.26         | 0.28   | 0.0076                           | 0                  | 1  |
| Standard Deviation *            |                           | 0.15           | 0.14                                | 0.092                                   | 0.055                | 0            | 0              | 0          | 0.13                   | 0.12           | 0                    | 0.11                | 0.12     | 0                           | 0.17         | 0        | 0                            | 0.032       | 1.1                 | 0.086        | 0.17   | 0.038                            | 0                  | 0  |
| * A Non Detect Multiplier       | of 0.5 has been applied   | •              | •                                   | •                                       | •                    |              |                | •          |                        |                |                      | •                   |          | -                           |              | •        |                              | •           | •                   | •            |        |                                  |                    | <u>.                                    </u> |

| DWP   | Aus | tralia |
|-------|-----|--------|
| Kyeem | agh | NSW    |



|   |  |            |                     |                     |            | Metals                                    |            |                     |              |            |                               | VOCs              |                       | SVOCs        |                               |                         |                               |                       |                      |                       |                       |                              |                                 |                      |                       |                       |
|---|--|------------|---------------------|---------------------|------------|---|------------|---------------------|--------------|------------|-------------------------------|-------------------|-----------------------|--------------|-------------------------------|-------------------------|-------------------------------|-----------------------|----------------------|-----------------------|-----------------------|------------------------------|---------------------------------|----------------------|-----------------------|-----------------------|
|   |  | Arsenic    | Cadmium             | , Chromium (III+VI) | Copper     | un no no no no no no no no no no no no no | Fead       | , Mercury           | , Nickel     | , Zinc     | cis-1,4-Dichloro-2-<br>butene | Pentachloroethane | trans-1,4-Dichloro-2- | EPN          | 1,1,1,2-<br>tetrachloroethane | , 1,1,1-trichloroethane | 1,1,2,2-<br>tetrachloroethane | 1,1,2-trichloroethane | , 1,1-dichloroethane | , 1, 1-dichloroethene | , 1,1-dichloropropene | 1,2,3-<br>* trichloropropane | 1,2-dibromo-3-<br>chloropropane | , 1,2-dichloroethane | , 1,2-dichloropropane | , 1,3-dichloropropane |
| EQL   |  | mg/kg<br>2 | <b>mg/kg</b><br>0.4 | mg/kg<br>2          | mg/kg<br>5 | <b>mg/kg</b><br>20                        | mg/kg<br>5 | <b>mg/kg</b><br>0.1 | mg/kg<br>2   | mg/kg<br>5 | mg/kg<br>0.5                  | 0.5               | mg/kg<br>0.5          | mg/kg<br>0.2 | <b>mg/kg</b><br>0.5           | <b>mg/kg</b><br>0.5     | mg/kg<br>0.5                  | <b>mg/kg</b><br>0.5   | <b>mg/kg</b><br>0.5  | mg/kg<br>0.5          | <b>mg/kg</b><br>0.5   | <b>mg/kg</b><br>0.5          | <b>mg/kg</b><br>0.5             | <b>mg/kg</b><br>0.5  | <b>mg/kg</b><br>0.5   | mg/kg<br>0.5          |
| NSW 2014 General Solid W                              | aste CT1 (No Leaching)                               | 100        | 20                  | 100                 |            |   | 100        | 4                   | 40           |            |                               |                   |                       |              | 200                           | 600                     | 26                            | 24                    |                      | 14                    |                       |                              |                                 | 10                   |                       |                       |
| NSW 2014 Restricted Solid<br>NSW 2014 General Solid W | Waste CT2 (No Leaching)<br>/aste SCC1 (with leached) | 400<br>500 | 80<br>100           | 400<br>1,900        |            |   | 400        | 16<br>50            | 160<br>1,050 |            |                               |                   |                       |              | 800<br>360                    | 2,400<br>1,080          | 104<br>46.8                   | 96<br>43.2            |                      | 56<br>0.7             |                       |                              |                                 | 40<br>0.5            |                       |                       |
| riald ID  | Data   |            |                     |                     |            |   |            |                     |              |            | 1                             |                   |                       |              |                               |                         |                               |                       | •                    |                       |                       | •                            |                                 |                      |                       |                       |
| ASB2  | 17/11/2018   | -          | -                   | -                   | -          | -   | -          | -                   | -            | -          | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| BH02_0.5  | 17/11/2018   | <2         | <0.4                | <5                  | <5         | -   | 9.8        | <0.1                | <5           | 17         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| BH2_1.0   | 17/11/2018   | <2         | <0.4                | <5                  | 5.6        | -   | 12         | <0.1                | <5           | 24         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                  | -                     | <0.5                         | -                               | <0.5                 | <0.5                  | <0.5                  |
| BH05_0.5<br>BH4 0.4                                   | 10/11/2018   | <2         | <0.4                | <5                  | 11         | -   | 13         | <0.1                | 13           | 25         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| <br>BH05_0.2-0.5                                      | 10/11/2018   | <2         | <0.4                | <5                  | <5         | -   | <5         | <0.1                | <5           | <5         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                  | -                     | <0.5                         | -                               | <0.5                 | <0.5                  | <0.5                  |
| TP01_0.2  | 10/11/2018   | <2         | <0.4                | 8.8                 | 27         | -   | 19         | <0.1                | 15           | 44         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| TP01_0.9  | 10/11/2018   | <2         | <0.4                | <5<br>19            | <5         | -   | 18         | <0.1                | <5           | 20         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| TP02_0.4  | 10/11/2018   | <2         | <0.4                | 10                  | 6.8        | -   | 8.1        | <0.1                | 9.6          | 27         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| <br>TP03_0.2  | 10/11/2018   | <2         | <0.4                | <5                  | 6.6        | -   | 19         | <0.1                | <5           | 35         | -                             | -                 | -                     | <0.2         | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| TP03_1.2  | 10/11/2018   | <2         | <0.4                | <5                  | <5         | -   | 6.2        | <0.1                | <5           | 11         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                  | -                     | <0.5                         | -                               | <0.5                 | <0.5                  | <0.5                  |
| TP03_ASB1   | 10/11/2018   | - <2       | - <0.4              | - <5                | - 87       | -   | - 38       | -                   | - <5         | - 36       | -                             | -                 | -                     | - <0.2       | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| TP04_0.4  | 10/11/2018   | -          | -                   | -                   | -          | -   | -          | -                   | -            | -          | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| TP05_0.1  | 10/11/2018   | <2         | <0.4                | <5                  | 5.2        | -   | 23         | <0.1                | <5           | 23         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| TP05_0.9  | 10/11/2018   | <2         | <0.4                | <5                  | <5         | 360                                       | <5         | <0.1                | <5           | <5         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                  | -                     | <0.5                         | -                               | <0.5                 | <0.5                  | <0.5                  |
| TP06_0.1  | 10/11/2018   | 2.8        | <0.4                | 130                 | 37         | -   | 8.1        | <0.1                | 130          | 86         | -                             | -                 | -                     | -            |                               | -                       |                               |                       | - <0.5               | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| TP07_0.1  | 10/11/2018   | 2.5        | <0.4                | 6.4                 | 8.4        | -   | 17         | 1.5                 | <5           | 46         | -                             | -                 | -                     | -            |                               |                         | -                             |                       | -                    | -                     | -                     | -                            | -                               |                      |                       | -                     |
| <br>TP07_0.4  | 10/11/2018   | <2         | <0.4                | <5                  | <5         | 1,500                                     | 11         | 0.2                 | <5           | 15         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| TP07_0.6  | 10/11/2018   | <2         | <0.4                | <5                  | 13         | -   | 9.0        | 0.7                 | <5           | 20         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| TP08_0.4  | 10/11/2018   | <2         | <0.4                | <5                  | <5         | -   | 7.3        | <0.1                | <5           | 10         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                  | -                     | <0.5                         | -                               | <0.5                 | <0.5                  | <0.5                  |
| TP10 0.1  | 10/11/2018   | <2         | <0.4                | <5                  | <5         | -   | 10         | <0.1                | <5           | 21         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| TP11_0.2  | 10/11/2018   | <2         | <0.4                | <5                  | <5         | -   | <5         | <0.1                | <5           | <5         | -                             | -                 | -                     | <0.2         | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| TP11_1.2  | 10/11/2018   | <2         | <0.4                | <5                  | <5         | -   | 19         | <0.1                | <5           | 12         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                  | -                     | <0.5                         | -                               | <0.5                 | <0.5                  | <0.5                  |
| TP12_0.2  | 10/11/2018   | <2         | <0.4                | <5                  | <5         | 630                                       | 13         | <0.1                | <5           | 17         | -                             | -                 | -                     | <0.2         | -<br>- C E                    | -<br>- C F              | -<br>- C E                    | -                     | -                    | -<br>- C E            | -                     | -<br>- C E                   | -                               | -                    | -<br><0 F             | -                     |
| TP13_0.1  | 17/11/2018   | -          | - 10.4              | - 52                | - 12       | -   |            | -                   |              | - 40       | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| TP14_0.1  | 17/11/2018   | -          | -                   | -                   | -          | -   | -          | -                   | -            | -          | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| TP14_0.7  | 17/11/2018   | <2         | <0.4                | <5                  | <5         | -   | <5         | <0.1                | <5           | <5         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                  | -                     | <0.5                         | -                               | <0.5                 | <0.5                  | <0.5                  |
| TP15_0.1  | 17/11/2018   | <2         | <0.4                | <5                  | 16         | -   | 65<br><5   | <b>0.1</b>          | <5           | 43         | -                             | -                 | -                     | -            | -                             | -                       | - <0.5                        | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| TP16 0.1  | 17/11/2018   | <2         | <0.4                | <5                  | <5         | -   | 17         | <0.1                | <5           | 120        | -                             | -                 | -                     | -            | -                             |                         | -                             | -                     | -                    | -                     | -                     | -                            | -                               |                      | -                     | -                     |
| TP16_0.8  | 17/11/2018   | <2         | <0.4                | <5                  | <5         | -   | 5.1        | <0.1                | <5           | 8.3        | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                  | -                     | <0.5                         | -                               | <0.5                 | <0.5                  | <0.5                  |
| TP17_0.1  | 17/11/2018   | -          | -                   | -                   | -          | -   | -          | -                   | -            | -          | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| TP17_0.5  | 17/11/2018   | <2         | <0.4                | <5                  | <5         | -   | <5         | <0.1                | <5           | <5         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                  | -                     | <0.5                         | -                               | <0.5                 | <0.5                  | <0.5                  |
| TP18_0.4  | 17/11/2018   | <2         | <0.4                | <5                  | <5         | -   | <5         | <0.1                | <5           | <5         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | < 0.5                 | -                     | <0.5                         | -                               | <0.5                 | <0.5                  | < 0.5                 |
| <br>TP19_0.1  | 10/11/2018   | <2         | <0.4                | <5                  | 7.3        | -   | 32         | <0.1                | <5           | 29         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| TP19_0.3  | 10/11/2018   | <2         | <0.4                | <5                  | 10         | -   | 10         | <0.1                | <5           | 25         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| TP20_0.1  | 17/11/2018   | <2         | <0.4                | 5.3                 | 12         | -   | 42         | <0.1                | <5           | 66<br>15   | -                             | -                 | -                     | <0.2         | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| QA100<br>QA200  | 10/11/2018   | <5         | <0.4                | <2                  | <5         | -   | 8          | <0.1                | <2           | 10         | < 0.5                         | <0.5              | < 0.5                 | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                  | < 0.5                 | <0.5                         | < 0.5                           | <0.5                 | <0.5                  | <0.5                  |
| QA300   | 17/11/2018   | <2         | <0.4                | <5                  | 5.2        | -   | 19         | <0.1                | <5           | 20         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| QA400   | 17/11/2018   | <5         | <1                  | <2                  | 5          | -   | 21         | <0.1                | <2           | 22         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                     | -                     | -                            | -                               | -                    | -                     | -                     |
| Statistics  |  |            |                     |                     |            |   |            |                     |              |            |                               |                   |                       |              |                               |                         |                               |                       |                      |                       |                       |                              |                                 |                      |                       |                       |
| Number of Results                                     |  | 41         | 41                  | 41                  | 41         | 3   | 41         | 41                  | 41           | 41         | 1                             | 1                 | 1                     | 10           | 15                            | 15                      | 15                            | 15                    | 15                   | 15                    | 1                     | 15                           | 1                               | 15                   | 15                    | 15                    |
| Minimum Concentration                                 |  | <2         | <0.4                | <2                  | 5          | 360                                       | <5         | 0.1                 | <2           | <5         | <0.5                          | <0.5              | <0.5                  | <0.2         | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                  | <0.5                  | <0.5                         | <0.5                            | <0.5                 | <0.5                  | <0.5                  |
| Maximum Concentration                                 |  | <5         | <1                  | 130                 | 37         | 1,500                                     | 65         | 1.5                 | 130          | 130        | <0.5                          | <0.5              | <0.5                  | <0.2         | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                  | <0.5                  | <0.5                         | <0.5                            | <0.5                 | <0.5                  | <0.5                  |
| Average Concentration *                               |  | 1.2        | 0.21                | 7.4                 | 7.2        | 830                                       | 16         | 0.12                | 7.6          | 29         |                               |                   |                       | 0.1          | 0.25                          | 0.25                    | 0.25                          | 0.25                  | 0.25                 | 0.25                  |                       | 0.25                         |                                 | 0.25                 | 0.25                  | 0.25                  |
| * A Non Detect Multiplier                             | of 0.5 bas been applied                              | 0.47       | 0.065               | 20                  | 7.1        | 596                                       | 14         | 0.26                | 20           | 29         |                               |                   |                       | U            | U                             | U                       | U                             | U                     | U                    | U                     |                       | U                            |                                 | U                    | U                     | U                     |

|                           |                           |                     |                    | Chlorir                    | nated Hydroc | arbons               |                    |              |            |               |                                |                 |                |                 |                     |                 |                   |                                  |                                   |                |
|---------------------------|---------------------------|---------------------|--------------------|----------------------------|--------------|----------------------|--------------------|--------------|------------|---------------|--------------------------------|-----------------|----------------|-----------------|---------------------|-----------------|-------------------|----------------------------------|-----------------------------------|----------------|
|                           |                           | 2,2-dichloropropane | Bromochloromethane | Bromodichlorometha<br>하 ne | Bromoform    | Carbon tetrachloride | Chlorodibromometha | Chloroethane | Chloroform | Chloromethane | ਰ cis-1,2-<br>더 dichloroethene | dichloropropene | Dibromomethane | Dichloromethane | Hexachlorobutadiene | Trichloroethene | Tetrachloroethene | 3 trans-1,2-<br>주 dichloroethene | 3 trans-1,3-<br>수 dichloropropene | Vinyl chloride |
| EQL                       |                           | 0.5                 | 0.5                | 0.5                        | 0.5          | 0.5                  | 0.5                | 0.5          | 0.5        | 0.5           | 0.5                            | 0.5             | 0.5            | 0.5             | 0.5                 | 0.5             | 0.5               | 0.5                              | 0.5                               | 0.5            |
| NSW 2014 General Solid V  | Vaste CT1 (No Leaching)   |                     |                    |                            |              | 10                   |                    |              | 120        |               |                                |                 |                | 172             |                     | 10              | 14                |                                  |                                   | 4              |
| NSW 2014 Restricted Soli  | d Waste CT2 (No Leaching) |                     |                    |                            |              | 40                   |                    |              | 480        |               |                                |                 |                | 688             |                     | 40              | 56                |                                  |                                   | 16             |
| NSW 2014 General Solid V  | Vaste SCC1 (with leached) |                     |                    |                            |              | 18                   |                    |              | 126        |               |                                |                 |                | 8.6             |                     | 18              | 25.2              |                                  |                                   | 7.2            |
| Field ID                  | Date                      | -                   |                    |                            |              |                      |                    |              |            |               |                                |                 |                |                 |                     |                 |                   |                                  |                                   |                |
| ASB2                      | 17/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| BH02_0.5                  | 17/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| BH03 0.5                  | 17/11/2018                | -                   | <0.5               | <0.5                       | <0.5         | <0.5                 | <0.5               | <0.5         | <0.5       | <0.5          | <0.5                           | <0.5            | <0.5           | - <0.5          | -                   | - <0.5          | <0.5              | <0.5                             | <0.5                              | <0.5           |
| BH4_0.4                   | 10/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| BH05_0.2-0.5              | 10/11/2018                | -                   | <0.5               | <0.5                       | <0.5         | <0.5                 | <0.5               | <0.5         | <0.5       | <0.5          | <0.5                           | <0.5            | <0.5           | <0.5            | -                   | <0.5            | <0.5              | <0.5                             | <0.5                              | <0.5           |
| TP01_0.2                  | 10/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| TP01_0.9                  | 10/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| TP02_0.1                  | 10/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| TP03_0.2                  | 10/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
|                           | 10/11/2018                | -                   | <0.5               | <0.5                       | <0.5         | <0.5                 | <0.5               | <0.5         | <0.5       | <0.5          | <0.5                           | <0.5            | <0.5           | <0.5            | -                   | <0.5            | <0.5              | <0.5                             | <0.5                              | <0.5           |
| TP03_ASB1                 | 10/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| TP04_0.1                  | 10/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| TP04_0.4                  | 10/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| TP05_0.1                  | 10/11/2018                | -                   | - <0.5             | - <0.5                     | - <0.5       | - <0.5               | - <0.5             | - <0.5       | - <0.5     | - <0.5        | - <0.5                         | <0.5            | - <0.5         | - <0.5          | -                   | - <0.5          | - <0.5            | <0.5                             | <0.5                              | - <0.5         |
| TP06 0.1                  | 10/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| TP06_0.3                  | 10/11/2018                | -                   | <0.5               | <0.5                       | <0.5         | <0.5                 | <0.5               | <0.5         | <0.5       | <0.5          | <0.5                           | <0.5            | <0.5           | <0.5            | -                   | <0.5            | <0.5              | <0.5                             | <0.5                              | <0.5           |
| TP07_0.1                  | 10/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| TP07_0.4                  | 10/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| TP07_0.6                  | 10/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| TP08_0.4                  | 10/11/2018                | -                   | <0.5               | <0.5                       | <0.5         | <0.5                 | <0.5               | <0.5         | <0.5       | <0.5          | <0.5                           | <0.5            | <0.5           | <0.5            | -                   | <0.5            | <0.5              | <0.5                             | <0.5                              | <0.5           |
| TP10 0.1                  | 10/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | _                                 | _              |
| TP11_0.2                  | 10/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| TP11_1.2                  | 10/11/2018                | -                   | <0.5               | <0.5                       | <0.5         | <0.5                 | <0.5               | <0.5         | <0.5       | <0.5          | <0.5                           | <0.5            | <0.5           | <0.5            | -                   | <0.5            | <0.5              | <0.5                             | <0.5                              | <0.5           |
| TP12_0.2                  | 10/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| TP13_0.1                  | 17/11/2018                | -                   | <0.5               | <0.5                       | <0.5         | <0.5                 | <0.5               | <0.5         | <0.5       | <0.5          | <0.5                           | <0.5            | <0.5           | <0.5            | -                   | <0.5            | <0.5              | <0.5                             | <0.5                              | <0.5           |
| TP13_0.4                  | 17/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| TP14_0.7                  | 17/11/2018                | -                   | <0.5               | <0.5                       | <0.5         | <0.5                 | <0.5               | <0.5         | <0.5       | <0.5          | <0.5                           | <0.5            | <0.5           | <0.5            | -                   | <0.5            | <0.5              | <0.5                             | <0.5                              | <0.5           |
|                           | 17/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| TP15_0.6                  | 17/11/2018                | -                   | <0.5               | <0.5                       | <0.5         | <0.5                 | <0.5               | <0.5         | <0.5       | <0.5          | <0.5                           | <0.5            | <0.5           | <0.5            | -                   | <0.5            | <0.5              | <0.5                             | <0.5                              | <0.5           |
| TP16_0.1                  | 17/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| TP16_0.8                  | 1//11/2018                | -                   | <0.5               | <0.5                       | <0.5         | <0.5                 | <0.5               | <0.5         | <0.5       | <0.5          | <0.5                           | <0.5            | <0.5           | <0.5            | -                   | <0.5            | <0.5              | <0.5                             | <0.5                              | <0.5           |
| TP17_0.1                  | 17/11/2018                | -                   | - <0.5             | - <0 5                     | - <0 5       | - <0 5               | - <0.5             | <0.5         | - <0.5     | - <0.5        | - <0.5                         | - <0.5          | - <0 5         | - <0.5          | -                   | - <0.5          | - <0.5            | - <0 5                           | - <0 5                            | - <0 5         |
| TP18_0.1                  | 17/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| TP18_0.4                  | 17/11/2018                | -                   | <0.5               | <0.5                       | <0.5         | <0.5                 | <0.5               | <0.5         | <0.5       | <0.5          | <0.5                           | <0.5            | <0.5           | <0.5            | -                   | <0.5            | <0.5              | <0.5                             | <0.5                              | <0.5           |
| TP19_0.1                  | 10/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| TP19_0.3                  | 10/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| OA100                     | 10/11/2018                | -                   | - <0.5             | - <0 5                     | - <0 5       | - <0 5               | - <0.5             | - <0.5       | - <0.5     | - <0.5        | - <0.5                         | - <0.5          | - <0 5         | - <0.5          | -                   | - <0.5          | - <0.5            | - <0 5                           | - <0 5                            | - <0 5         |
| QA200                     | 10/11/2018                | <0.5                | -                  | <0.5                       | <0.5         | <0.5                 | <0.5               | <5           | <0.5       | <5            | <0.5                           | <0.5            | <0.5           | -               | <0.5                | <0.5            | <0.5              | <0.5                             | <0.5                              | <5             |
| QA300                     | 17/11/2018                | -                   |                    |                            |              |                      | -                  | -            | -          |               |                                |                 |                |                 |                     |                 |                   | -                                | -                                 |                |
| QA400                     | 17/11/2018                | -                   | -                  | -                          | -            | -                    | -                  | -            | -          | -             | -                              | -               | -              | -               | -                   | -               | -                 | -                                | -                                 | -              |
| Statistics                |                           |                     |                    |                            |              |                      |                    |              |            |               |                                |                 |                |                 |                     |                 |                   |                                  |                                   |                |
| Number of Results         |                           | 1                   | 14                 | 15                         | 15           | 15                   | 15                 | 15           | 15         | 15            | 15                             | 15              | 15             | 14              | 1                   | 15              | 15                | 15                               | 15                                | 15             |
| Minimum Concentration     |                           | <0.5                | <0.5               | <0.5                       | <0.5         | <0.5                 | <0.5               | <0.5         | <0.5       | <0.5          | <0.5                           | <0.5            | <0.5           | <0.5            | <0.5                | <0.5            | <0.5              | <0.5                             | <0.5                              | <0.5           |
| Maximum Concentration     |                           | <0.5                | <0.5               | <0.5                       | <0.5         | <0.5                 | <0.5               | <5           | <0.5       | <5            | <0.5                           | <0.5            | <0.5           | <0.5            | <0.5                | <0.5            | <0.5              | <0.5                             | <0.5                              | <5             |
| Average Concentration *   |                           |                     | 0.25               | 0.25                       | 0.25         | 0.25                 | 0.25               | 0.4          | 0.25       | 0.4           | 0.25                           | 0.25            | 0.25           | 0.25            |                     | 0.25            | 0.25              | 0.25                             | 0.25                              | 0.4            |
| Standard Deviation *      |                           |                     | 0                  | 0                          | 0            | 0                    | 0                  | 0.58         | 0          | 0.58          | 0                              | 0               | 0              | 0               |                     | 0               | 0                 | 0                                | 0                                 | 0.58           |
| * A Non Detect Multiplier | of 0.5 has been applied.  |                     |                    |                            |              |                      |                    |              |            |               |                                |                 |                |                 |                     |                 |                   |                                  |                                   |                |

DWP Australia Kyeemagh NSW

|                          |                           |                            |                            |                   |                     |                     | I                   | Halogenated     | Hydrocarbon     | s            |              |               |                      |             |                      |         |        |        |                   |        |           |                 |                   |            |
|--------------------------|---------------------------|----------------------------|----------------------------|-------------------|---------------------|---------------------|---------------------|-----------------|-----------------|--------------|--------------|---------------|----------------------|-------------|----------------------|---------|--------|--------|-------------------|--------|-----------|-----------------|-------------------|------------|
|                          |                           | 1,2,3-<br>trichlorobenzene | 1,2,4-<br>trichlorobenzene | 1,2-dibromoethane | 1,2-dichlorobenzene | 1,3-dichlorobenzene | 1,4-dichlorobenzene | 2-chlorotoluene | 4-chlorotoluene | Bromobenzene | Bromomethane | Chlorobenzene | Dichlorodifluorometh | lodomethane | Trichlorofluorometha | 4,4-DDE | a-BHC  | Aldrin | Aldrin + Dieldrin | C) Ha  | Chlordane | Chlordane (cis) | Chlordane (trans) | C Harris   |
| FOI                      |                           | 0.5                        | 0.5                        | 0.5               | 0.5                 | 0.5                 | 0.5                 | 0.5             | 0.5             | 0.5          | 0.5          | 0.5           | 0.5                  | 0.5         | 0.5                  | 0.05    | 0.05   | 0.05   | 0.05              | 0.05   | 0.05      | 0.05            | 0.05              | 0.05       |
| NSW 2014 General Solid   | Waste CT1 (No Leaching)   |                            |                            |                   | 86                  |                     | 150                 |                 |                 |              |              | 2,000         |                      |             |                      |         |        |        |                   |        |           |                 |                   |            |
| NSW 2014 Restricted Sol  | d Waste CT2 (No Leaching) |                            |                            |                   | 344                 |                     | 600                 |                 |                 |              |              | 8,000         |                      |             |                      |         |        |        |                   |        |           |                 |                   |            |
| NSW 2014 General Solid   | Waste SCC1 (with leached) |                            |                            |                   | 4.3                 |                     | 7.5                 |                 |                 |              |              | 3,600         |                      |             |                      |         |        |        |                   |        |           |                 |                   |            |
| Field ID                 | Date                      |                            |                            |                   |                     |                     |                     |                 |                 |              |              |               |                      |             |                      |         |        |        |                   |        |           |                 |                   |            |
| ASB2                     | 17/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | - 1                  | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| BH02_0.5                 | 17/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| BH2_1.0                  | 17/11/2018                | -                          | -                          | <0.5              | <0.5                | <0.5                | <0.5                | -               | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                 | <0.5        | <0.5                 | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| BH03_0.5                 | 17/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| BH4_0.4                  | 10/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| BH05_0.2-0.5             | 10/11/2018                | -                          | -                          | <0.5              | <0.5                | <0.5                | <0.5                | -               | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                 | <0.5        | <0.5                 | -       | -      | -      | -                 | -      | -         | -               | -                 |            |
| TP01_0.2                 | 10/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 |            |
| TP01_0.9                 | 10/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| TP02_0.1                 | 10/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | 0.00    | <0.05  | <0.05  | 0.04              | <0.05  | 0.7       | -               | -                 | <0.05      |
| TP02_0.4                 | 10/11/2018                |                            | _                          | -                 |                     |                     |                     |                 | -               | -            | -            | -             | -                    | _           | -                    | <0.05   | <0.05  | <0.05  | <0.05             | <0.05  | <0.1      | -               |                   | <0.05      |
| TP03 1.2                 | 10/11/2018                | -                          | -                          | <0.5              | <0.5                | <0.5                | <0.5                | -               | <0.5            | < 0.5        | <0.5         | <0.5          | <0.5                 | <0.5        | < 0.5                | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| TP03 ASB1                | 10/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
|                          | 10/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | <0.05   | <0.05  | < 0.05 | < 0.05            | <0.05  | <0.1      | -               | -                 | <0.05      |
| TP04_0.4                 | 10/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| TP05_0.1                 | 10/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| TP05_0.9                 | 10/11/2018                | -                          | -                          | <0.5              | <0.5                | <0.5                | <0.5                | -               | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                 | <0.5        | <0.5                 | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| TP06_0.1                 | 10/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| TP06_0.3                 | 10/11/2018                | -                          | -                          | <0.5              | <0.5                | <0.5                | <0.5                | -               | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                 | <0.5        | <0.5                 | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| TP07_0.1                 | 10/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| TP07_0.4                 | 10/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| TP07_0.8                 | 10/11/2018                | -                          | -                          | - <0.5            | - <0.5              | - <0.5              |                     | -               | - <0.5          | - <0.5       |              | - <0.5        |                      | <0.5        | - <0.5               | -       | -      | -      | -                 | -      | -         | -               | -                 |            |
| TP09_0.3                 | 10/11/2018                |                            | _                          |                   |                     |                     |                     | -               | -               | -            |              | -             |                      |             | -                    |         |        |        | _                 | _      |           | -               |                   |            |
| TP10 0.1                 | 10/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| TP11_0.2                 | 10/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | < 0.05  | < 0.05 | < 0.05 | < 0.05            | <0.05  | <0.1      | -               | -                 | <0.05      |
| TP11_1.2                 | 10/11/2018                | -                          | -                          | <0.5              | <0.5                | <0.5                | <0.5                | -               | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                 | <0.5        | <0.5                 | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| TP12_0.2                 | 10/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | <0.05   | <0.05  | <0.05  | <0.05             | <0.05  | <0.1      | -               | -                 | <0.05      |
| TP13_0.1                 | 17/11/2018                | -                          | -                          | <0.5              | <0.5                | <0.5                | <0.5                | -               | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                 | <0.5        | <0.5                 | <0.05   | <0.05  | <0.05  | <0.05             | <0.05  | <0.1      | -               | -                 | <0.05      |
| TP13_0.4                 | 17/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| TP14_0.1                 | 17/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 |            |
| TP14_0.7                 | 17/11/2018                | -                          | -                          | <0.5              | <0.5                | <0.5                | <0.5                | -               | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                 | <0.5        | <0.5                 | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| TP15_0.1                 | 1//11/2018                | -                          |                            | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      |           | -               | -                 | -          |
| TP16_0.0                 | 17/11/2010                |                            |                            | ×0.5              | <0.5                | ×0.5                | <0.5                | -               | ×0.5            | <0.5         | <0.5         | <0.5          | ×0.5                 | <b>NU.5</b> | <0.5                 | <0.05   | NU.U5  | <0.05  | <0.05             | <0.05  | <0.1      | -               | -                 | <0.05      |
| TP16 0.8                 | 17/11/2018                | -                          | -                          | <0.5              | <0.5                | <0.5                | <0.5                | -               | <0.5            | <0.5         | - <0.5       | <0.5          | <0.5                 | <0.5        | <0.5                 | -       | -      | -      | -                 | -      | -         | -               | -                 | <u>+ -</u> |
| TP17 0.1                 | 17/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            |              | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| TP17_0.5                 | 17/11/2018                | -                          | - 1                        | <0.5              | <0.5                | <0.5                | <0.5                | -               | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                 | <0.5        | <0.5                 | -       | -      | -      | -                 | - 1    | - 1       | -               | -                 | - 1        |
|                          | 17/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | <0.05   | <0.05  | <0.05  | 0.05              | <0.05  | <0.1      | -               | -                 | <0.05      |
| TP18_0.4                 | 17/11/2018                | -                          | -                          | <0.5              | < 0.5               | <0.5                | <0.5                | -               | <0.5            | <0.5         | < 0.5        | < 0.5         | <0.5                 | < 0.5       | <0.5                 | -       |        | -      | -                 | -      | -         | -               | -                 | -          |
| TP19_0.1                 | 10/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| TP19_0.3                 | 10/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| TP20_0.1                 | 17/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | < 0.05  | < 0.05 | < 0.05 | < 0.05            | < 0.05 | <0.1      | -               | -                 | < 0.05     |
| QA100                    | 10/11/2018                | -                          | -                          | <0.5              | <0.5                | <0.5                | <0.5                | -               | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                 | <0.5        | <0.5                 | < 0.05  | < 0.05 | <0.05  | < 0.05            | < 0.05 | <0.1      | -               | -                 | < 0.05     |
| QA200                    | 10/11/2018                | <0.5                       | <0.5                       | <0.5              | <0.5                | <0.5                | <0.5                | <0.5            | <0.5            | <0.5         | <5           | <0.5          | <5                   | <0.5        | <5                   | <0.05   | <0.05  | <0.05  | <0.05             | <0.05  | <0.05     | <0.05           | <0.05             | <0.05      |
| QA300                    | 17/11/2018                | -                          | -                          | -                 | -                   | -                   | -                   | -               | -               | -            | -            | -             | -                    | -           | -                    | -       | -      | -      | -                 | -      | -         | -               | -                 | -          |
| Lat. 199                 |                           | U                          | 1                          | 1                 | 1                   |                     |                     |                 | 1               | 1            |              | 1             | -                    | 1           | 1                    | U       | _      |        | -                 | 1      |           | -               | -                 | 1          |
| Statistics               |                           |                            |                            |                   |                     |                     |                     |                 |                 |              |              |               |                      |             |                      |         |        |        |                   |        |           |                 |                   |            |
| Number of Results        |                           | 1                          | 1                          | 15                | 15                  | 15                  | 15                  | 1               | 15              | 15           | 15           | 15            | 15                   | 15          | 15                   | 11      | 11     | 11     | 11                | 11     | 11        | 1               | 1                 | 11         |
| Minimum Concentration    |                           | <0.5                       | <0.5                       | <0.5              | <0.5                | <0.5                | <0.5                | <0.5            | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                 | <0.5        | <0.5                 | <0.05   | <0.05  | <0.05  | 0.05              | <0.05  | <0.05     | <0.05           | <0.05             | <0.05      |
| Maximum Concentration    |                           | <0.5                       | <0.5                       | <0.5              | <0.5                | <0.5                | <0.5                | <0.5            | <0.5            | <0.5         | <5           | <0.5          | <5                   | <0.5        | <5                   | 0.06    | <0.05  | <0.05  | 0.64              | <0.05  | 0.7       | <0.05           | <0.05             | <0.05      |
| Average Concentration *  |                           |                            |                            | 0.25              | 0.25                | 0.25                | 0.25                |                 | 0.25            | 0.25         | 0.4          | 0.25          | 0.4                  | 0.25        | 0.4                  | 0.028   | 0.025  | 0.025  | 0.083             | 0.025  | 0.11      |                 |                   | 0.025      |
| Standard Deviation *     |                           |                            |                            | 0                 | 0                   | 0                   | 0                   |                 | 0               | 0            | 0.58         | 0             | 0.58                 | 0           | 0.58                 | 0.011   | 0      | 0      | 0.18              | 0      | 0.2       |                 |                   | 0          |
| * A Non Detect Multiplie | r of 0.5 has been applied |                            |                            |                   |                     |                     |                     |                 |                 |              |              |               |                      |             |                      |         |        |        |                   |        |           |                 |                   |            |

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| -    | -     | -     | -      |
| ).7  | -     | -     | < 0.05 |
| -    | -     | -     | -      |
| 0.1  | -     | -     | < 0.05 |
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| -    | -     | -     | -      |
| 0.1  | -     | -     | <0.05  |
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| 0.1  | -     | -     | < 0.05 |
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| 0.1  | -     | -     | < 0.05 |
| 0.1  | -     | -     | < 0.05 |
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| 0.1  | -     | -     | <0.05  |
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| 0.1  | -     | -     | <0.05  |
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| -    | -     | -     | -      |
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| 0.1  | -     | -     | <0.05  |
| 0.1  | -     | -     | <0.05  |
| ).05 | <0.05 | <0.05 | <0.05  |
| -    | -     | -     | -      |
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| DWP   | Aus | tralia |
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|  |   |         |        |             | Organashlari | ino Posticidos |                |                 |                      |          |                   |                 |                   |              |                      |                     |                |             |                    |                       |                   |                   |                   |                |                      |
|--|---|---------|--------|-------------|--------------|----------------|----------------|-----------------|----------------------|----------|-------------------|-----------------|-------------------|--------------|----------------------|---------------------|----------------|-------------|--------------------|-----------------------|-------------------|-------------------|-------------------|----------------|----------------------|
|  |   |         |        |             | Organochion  | ne Pesticides  |                |                 | e,                   |          |                   |                 |                   |              | a                    | 0                   |                |             |                    |                       |                   |                   |                   |                | Ę                    |
|  |   | 000     | DDT ,  | DDT+DDE+DDD | , Dieldrin   | , Endosulfan   | , Endosulfan I | , Endosulfan II | , Endosulfan sulphat | , Endrin | , Endrin aldehyde | , Endrin ketone | , g-BHC (Lindane) | , Heptachlor | , Heptachlor epoxide | , Hexachlorobenzene | , Methoxychlor | , Toxaphene | , Azinophos methyl | , Bolstar (Sulprofos) | , Bromophos-ethyl | , Carbophenothion | , Chlorfenvinphos | , Chlorpyrifos | , Chlorpyrifos-methy |
| FOI  |   | 0.05    | mg/kg  | 0.05        | 0.05         | mg/kg          | mg/kg          | mg/kg           | 0.05                 | mg/kg    | mg/kg             | mg/kg           | 0.05              | mg/kg        | mg/kg                | 0.05                | 0.05           | mg/kg       | mg/kg              | <b>mg/kg</b>          | 0.05              | 0.05              | mg/kg             | <b>mg/kg</b>   | 0.05                 |
| NSW 2014 General Solid Wa                              | aste CT1 (No Leaching)                              | 0100    | 0100   | 0100        | 0.05         | 60             | 60             | 60              | 60                   | 0100     | 0100              | 0100            | 0100              | 0.00         | 0.00                 | 0.00                | 0100           | -           | 0.05               | 012                   | 0100              | 0100              | 0.00              | 4              | 0100                 |
| NSW 2014 Restricted Solid<br>NSW 2014 General Solid Wa | Waste CT2 (No Leaching)<br>aste SCC1 (with leached) |         |        |             |              | 240<br>3 108   | 240<br>108     | 240<br>108      | 240<br>108           |          |                   |                 |                   |              |                      |                     |                |             |                    |                       |                   |                   |                   | 16<br>7.5      |                      |
| Field ID   | Data  |         |        |             |              |                |                |                 |                      |          |                   |                 |                   |              |                      |                     |                |             |                    |                       |                   |                   | I                 |                |                      |
| ASB2   | 17/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| BH02_0.5   | 17/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| BH2_1.0  | 17/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| BH4_0.4  | 10/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| BH05_0.2-0.5   | 10/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP01_0.2   | 10/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP01_0.9   | 10/11/2018  | - <0.05 | 0.06   | - 0.12      | 0.64         | -              | - <0.05        | - <0.05         | - <0.05              | - <0.05  | - <0.05           | - <0.05         | - <0.05           | - <0.05      | - <0.05              | - <0.05             | - <0.05        | - <1        | - <0.2             | - <0.2                | -                 | -                 | - <0.2            | - <0.2         | - <0.2               |
| TP02_0.4   | 10/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP03_0.2   | 10/11/2018  | <0.05   | <0.05  | <0.05       | <0.05        | -              | <0.05          | <0.05           | <0.05                | <0.05    | <0.05             | <0.05           | <0.05             | <0.05        | <0.05                | <0.05               | <0.05          | <1          | <0.2               | <0.2                  | -                 | -                 | <0.2              | <0.2           | <0.2                 |
| TP03_1.2   | 10/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP05_A3B1  | 10/11/2018  | < 0.05  | < 0.05 | < 0.05      | < 0.05       | -              | < 0.05         | < 0.05          | < 0.05               | < 0.05   | < 0.05            | < 0.05          | < 0.05            | < 0.05       | < 0.05               | < 0.05              | < 0.05         | <1          | <0.2               | <0.2                  | -                 | -                 | <0.2              | <0.2           | <0.2                 |
| <br>TP04_0.4   | 10/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP05_0.1   | 10/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP05_0.9   | 10/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP06_0.1   | 10/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP07_0.1   | 10/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP07_0.4   | 10/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP07_0.6   | 10/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP08_0.4   | 10/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP10_0.1   | 10/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP11_0.2   | 10/11/2018  | <0.05   | <0.05  | <0.05       | <0.05        | -              | <0.05          | <0.05           | <0.05                | <0.05    | <0.05             | <0.05           | <0.05             | <0.05        | <0.05                | <0.05               | <0.05          | <1          | <0.2               | <0.2                  | -                 | -                 | <0.2              | <0.2           | <0.2                 |
| TP11_1.2   | 10/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP12_0.2   | 10/11/2018  | <0.05   | <0.05  | <0.05       | <0.05        | -              | <0.05          | <0.05           | <0.05                | <0.05    | <0.05             | <0.05           | <0.05             | <0.05        | <0.05                | <0.05               | <0.05          | <1          | <0.2               | <0.2                  | -                 | -                 | <0.2              | <0.2           | <0.2                 |
| TP13_0.4   | 17/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP14_0.1   | 17/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP14_0.7   | 17/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP15_0.1   | 17/11/2018  | < 0.05  | < 0.05 | < 0.05      | < 0.05       | -              | < 0.05         | < 0.05          | < 0.05               | < 0.05   | < 0.05            | < 0.05          | < 0.05            | < 0.05       | < 0.05               | < 0.05              | < 0.05         | <1          | <0.2               | <0.2                  | -                 | -                 | < 0.2             | <0.2           | <0.2                 |
| <br>TP16_0.1   | 17/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP16_0.8   | 17/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP17_0.1   | 17/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP17_0.3   | 17/11/2018  | < 0.05  | < 0.05 | < 0.05      | 0.05         | -              | < 0.05         | < 0.05          | < 0.05               | < 0.05   | < 0.05            | < 0.05          | < 0.05            | < 0.05       | < 0.05               | < 0.05              | < 0.05         | <1          | <0.2               | <0.2                  | -                 | -                 | < 0.2             | <0.2           | <0.2                 |
| <br>TP18_0.4   | 17/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP19_0.1   | 10/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| TP19_0.3   | 10/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | - <0.05           | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| QA100  | 10/11/2018  | <0.05   | <0.05  | <0.05       | <0.05        | -              | <0.05          | <0.05           | <0.05                | <0.05    | <0.05             | <0.05           | <0.05             | <0.05        | < 0.05               | <0.05               | <0.05          | <1          | <0.2               | <0.2                  | -                 | -                 | <0.2              | <0.2           | <0.2                 |
| QA200  | 10/11/2018  | <0.05   | <0.2   | <0.05       | <0.05        | <0.05          | <0.05          | <0.05           | <0.05                | <0.05    | <0.05             | <0.05           | <0.05             | <0.05        | <0.05                | <0.05               | <0.2           | -           | <0.05              | -                     | <0.05             | <0.05             | <0.05             | <0.05          | <0.05                |
| QA300  | 17/11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| QA400  | 1//11/2018  | -       | -      | -           | -            | -              | -              | -               | -                    | -        | -                 | -               | -                 | -            | -                    | -                   | -              | -           | -                  | -                     | -                 | -                 | -                 | -              | -                    |
| Statistics   |   |         |        |             |              |                |                |                 |                      |          |                   |                 |                   |              |                      |                     |                |             |                    |                       |                   |                   |                   |                |                      |
| Number of Results                                      |   | 11      | 11     | 11          | 11           | 1              | 11             | 11              | 11                   | 11       | 11                | 11              | 11                | 11           | 11                   | 11                  | 11             | 10          | 11                 | 10                    | 1                 | 1                 | 11                | 11             | 11                   |
| Minimum Concentration                                  |   | <0.05   | <0.05  | <0.05       | 0.05         | <0.05          | <0.05          | <0.05           | <0.05                | <0.05    | <0.05             | <0.05           | <0.05             | <0.05        | <0.05                | <0.05               | <0.05          | <1          | <0.05              | <0.2                  | <0.05             | <0.05             | <0.05             | <0.05          | <0.05                |
| Maximum Concentration                                  |   | <0.05   | <0.2   | 0.12        | 0.64         | <0.05          | <0.05          | <0.05           | <0.05                | <0.05    | <0.05             | <0.05           | <0.05             | <0.05        | <0.05                | <0.05               | <0.2           | <1          | <0.2               | <0.2                  | <0.05             | <0.05             | <0.2              | <0.2           | <0.2                 |
| Average Concentration *                                |   | 0.025   | 0.035  | 0.034       | 0.083        |                | 0.025          | 0.025           | 0.025                | 0.025    | 0.025             | 0.025           | 0.025             | 0.025        | 0.025                | 0.025               | 0.032          | 0.5         | 0.093              | 0.1                   |                   |                   | 0.093             | 0.093          | 0.093                |
| * A Neg Detect Multiplier e                            | f O F has been applied                              | U       | 0.024  | 0.029       | 0.18         |                | U              | U               | U                    | U        | U                 | U               | U                 | U            | U                    | U                   | 0.023          | U           | 0.023              | U                     | I                 |                   | 0.023             | 0.023          | 0.023                |

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| -   | -     | <0.2  | <0.2  | <0.2  |
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|--|--|--------------------|--------------------|--------------------|-------------------|---------------------|---------------------|---------------------|-----------------|-------------------|--------------|------------|------------------|--------|-------|---------------------|----------------------------------|------------------------|-----------------------|---------------------|---------|-------|-------|-----------------|------------------|-------|
|  |  | Coumaphos<br>mg/kg | Demeton-O<br>mg/kg | Demeton-S<br>mg/kg | Diazinon<br>wg/kg | Dichlorvos<br>mg/kg | mg/gm<br>bimethoate | Disulfoton<br>wg/kg | Ethion<br>mg/kg | Ethoprop<br>mg/kg | mg/kg        | mg/kg      | Fenthio<br>Mg/kg | mg/kg  | mg/kg | gay/ga<br>barathion | w<br>Bay<br>Mevinphos (Phosdrin) | Monocrotophos<br>mg/kg | Bay/Ba<br>Bay/Dibrom) | D methoate<br>mg/kg | Phorate | mg/kg | mg/kg | la nuo<br>mg/kg | ଅ<br>ଅନୁ<br>ଅନ୍ଧ | mg/kg |
| EQL  |  | 2                  | 0.2                | 0.2                | 0.05              | 0.05                | 0.05                | 0.2                 | 0.05            | 0.2               | 0.2          | 0.2        | 0.05             | 0.05   | 0.2   | 0.2                 | 0.2                              | 0.2                    | 0.2                   | 2                   | 0.2     | 0.05  | 0.2   | 0.2             | 0.2              | 0.2   |
| NSW 2014 General Solid \                             | Waste CT1 (No Leaching)                                |                    |                    |                    |                   |                     |                     |                     |                 |                   |              |            |                  |        |       |                     |                                  |                        |                       |                     |         |       |       |                 |                  |       |
| NSW 2014 Restricted Soli<br>NSW 2014 General Solid V | d Waste CT2 (No Leaching)<br>Waste SCC1 (with leached) |                    |                    |                    |                   |                     |                     |                     |                 |                   |              |            |                  |        |       |                     |                                  |                        |                       |                     |         |       |       |                 |                  |       |
| Field ID   | Date   |                    |                    |                    |                   |                     |                     |                     |                 |                   |              |            |                  |        |       |                     |                                  |                        |                       |                     |         |       |       |                 |                  |       |
| ASB2   | 17/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| BH02_0.5   | 17/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| BH2_1.0  | 17/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| BH03_0.5   | 17/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| BH4_0.4  | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| BH05_0.2-0.5   | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP01_0.2   | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP01_0.9   | 10/11/2018   | -                  | <0.2               |                    | -                 |                     | -                   | -                   | -               |                   | -            |            |                  | - <0.2 |       | <0.2                |                                  |                        |                       |                     |         | -     |       |                 |                  | <0.2  |
| TP02_0.1   | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                |       |
| TP03 0.2   | 10/11/2018   | <2                 | <0.2               | <0.2               | <0.2              | <0.2                | <0.2                | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2             | <0.2   | <0.2  | <0.2                | <0.2                             | <2                     | <0.2                  | <2                  | <0.2    | -     | <0.2  | <0.2            | <0.2             | <0.2  |
|  | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP03_ASB1  | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP04_0.1   | 10/11/2018   | <2                 | <0.2               | <0.2               | <0.2              | <0.2                | <0.2                | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2             | <0.2   | <0.2  | <0.2                | <0.2                             | <2                     | <0.2                  | <2                  | <0.2    | -     | <0.2  | <0.2            | <0.2             | <0.2  |
| TP04_0.4   | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP05_0.1   | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP05_0.9   | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP06_0.1   | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                |       |
| TP07 0.1   | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | _     | -     | -               | _                | -     |
| TP07 0.4   | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| <br>TP07_0.6   | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP08_0.4   | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP09_0.3   | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP10_0.1   | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP11_0.2   | 10/11/2018   | <2                 | <0.2               | <0.2               | <0.2              | <0.2                | <0.2                | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2             | <0.2   | <0.2  | <0.2                | <0.2                             | <2                     | <0.2                  | <2                  | <0.2    | -     | <0.2  | <0.2            | <0.2             | <0.2  |
| TP11_1.2   | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                |       |
| TP13_01  | 17/11/2018   | <2                 | <0.2               | <0.2               | <0.2              | <0.2                | <0.2                | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2             | <0.2   | <0.2  | <0.2                | <0.2                             | <2                     | <0.2                  | <2                  | <0.2    | _     | <0.2  | <0.2            | <0.2             | <0.2  |
| TP13 0.4   | 17/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP14_0.1   | 17/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP14_0.7   | 17/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP15_0.1   | 17/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP15_0.6   | 17/11/2018   | <2                 | <0.2               | <0.2               | <0.2              | <0.2                | <0.2                | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2             | <0.2   | <0.2  | <0.2                | <0.2                             | <2                     | <0.2                  | <2                  | <0.2    | -     | <0.2  | <0.2            | <0.2             | <0.2  |
| TP16_0.1   | 17/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          |                  | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                |       |
| TP17_0.1   | 17/11/2018   |                    | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                |       |
| TP17_0.1   | 17/11/2018   |                    | -                  |                    | + -               | -                   | -                   | -                   | -               | -                 | -            | -          | + -              | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP18 0.1   | 17/11/2018   | <2                 | <0.2               | <0.2               | <0.2              | <0.2                | <0.2                | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2             | <0.2   | <0.2  | <0.2                | <0.2                             | <2                     | <0.2                  | <2                  | <0.2    | -     | <0.2  | <0.2            | <0.2             | <0.2  |
| TP18_0.4   | 17/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP19_0.1   | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP19_0.3   | 10/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| TP20_0.1   | 17/11/2018   | <2                 | <0.2               | <0.2               | <0.2              | <0.2                | <0.2                | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2             | <0.2   | <0.2  | <0.2                | <0.2                             | <2                     | <0.2                  | <2                  | <0.2    | -     | <0.2  | <0.2            | <0.2             | <0.2  |
| QA100  | 10/11/2018   | <2                 | <0.2               | <0.2               | <0.2              | <0.2                | <0.2                | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2             | <0.2   | <0.2  | <0.2                | <0.2                             | <2                     | <0.2                  | <2                  | <0.2    | -     | <0.2  | <0.2            | <0.2             | <0.2  |
| QA200  | 10/11/2018   | -                  | -                  | -                  | <0.05             | <0.05               | <0.05               | -                   | <0.05           | -                 | -            | -          | <0.05            | <0.05  | -     | <0.2                | -                                | <0.2                   | -                     | -                   | -       | <0.05 | -     | -               | -                | -     |
| QA300  | 17/11/2018   | -                  | -                  | -                  | -                 | -                   | -                   | -                   | -               | -                 | -            | -          | -                | -      | -     | -                   | -                                | -                      | -                     | -                   | -       | -     | -     | -               | -                | -     |
| 400  | 17/11/2010   | -                  |                    | I                  | 1 -               |                     | -                   | I                   | -               | I -               | -            | -          | I -              | I -    | -     |                     |                                  |                        |                       |                     |         | -     | -     | -               | -                |       |
| Statistics   |  |                    |                    |                    |                   |                     |                     |                     |                 |                   |              |            |                  |        |       |                     |                                  |                        |                       |                     |         |       |       |                 |                  |       |
| Number of Results                                    |  | 10                 | 10                 | 10                 | 11                | 11                  | 11                  | 10                  | 11              | 10                | 10           | 10         | 11               | 11     | 10    | 11                  | 10                               | 11                     | 10                    | 10                  | 10      | 1     | 10    | 10              | 10               | 10    |
| Minimum Concentration                                |  | <2                 | <0.2               | <0.2               | <0.05             | <0.05               | <0.05               | <0.2                | <0.05           | <0.2              | <0.2         | <0.2       | <0.05            | <0.05  | <0.2  | <0.2                | <0.2                             | <0.2                   | <0.2                  | <2                  | <0.2    | <0.05 | <0.2  | <0.2            | <0.2             | <0.2  |
| Maximum Concentration                                |  | <2                 | <0.2               | <0.2               | <0.2              | <0.2                | <0.2                | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2             | <0.2   | <0.2  | <0.2                | <0.2                             | <2                     | <0.2                  | <2                  | <0.2    | <0.05 | <0.2  | <0.2            | <0.2             | <0.2  |
| Average Concentration *                              |  | 1                  | 0.1                | 0.1                | 0.093             | 0.093               | 0.093               | 0.1                 | 0.093           | 0.1               | 0.1          | 0.1        | 0.093            | 0.093  | 0.1   | 0.1                 | 0.1                              | 0.92                   | 0.1                   | 1                   | 0.1     |       | 0.1   | 0.1             | 0.1              | 0.1   |
| Standard Deviation *                                 |  | 0                  | 0                  | 0                  | 0.023             | 0.023               | 0.023               | 0                   | 0.023           | 0                 | 0            | 0          | 0.023            | 0.023  | 0     | 0                   | 0                                | 0.27                   | 0                     | 0                   | 0       |       | 0     | 0               | 0                | 0     |
| * A Non Detect Multiplier                            | of 0.5 has been applied.                               |                    |                    |                    |                   |                     |                     |                     |                 |                   |              |            |                  |        |       |                     |                                  |                        |                       |                     |         |       |       |                 |                  |       |



|                         |                             |                   |                     |                  |                          | Solvents |                |                  |               | Insecticides |                  |           | Pesticides |                   |                      |               |               |               | Polychlorinat | ted Biphenyls | 5               |               |                     |
|-------------------------|-----------------------------|-------------------|---------------------|------------------|--------------------------|----------|----------------|------------------|---------------|--------------|------------------|-----------|------------|-------------------|----------------------|---------------|---------------|---------------|---------------|---------------|-----------------|---------------|---------------------|
|                         |                             | Tetrachlorvinphos | Methyl Ethyl Ketone | 2-hexanone (MBK) | 4-Methyl-2-<br>pentanone | Acetone  | Allyl chloride | Carbon disulfide | Vinyl acetate | Tokuthion    | Demeton-S-methyl | Enamiphos | Barathion  | Pirimiphos-methyl | 8<br>Pirimphos-ethyl | Arochlor 1016 | Arochlor 1221 | Arochlor 1232 | Arochlor 1242 | Arochlor 1248 | a Arochlor 1254 | Arochlor 1260 | PCBs (Sum of total) |
| EQL                     |                             | 0.2               | 0.5                 | 5                | 0.5                      | 0.5      | 0.5            | 0.5              | 5             | 0.2          | 0.05             | 0.05      | 0.2        | 0.2               | 0.05                 | 0.1           | 0.1           | 0.1           | 0.1           | 0.1           | 0.1             | 0.1           | 0.1                 |
| NSW 2014 General Solid  | Waste CT1 (No Leaching)     |                   | 4,000               |                  |                          |          |                |                  |               |              |                  |           |            |                   |                      |               |               |               |               |               |                 |               | 50                  |
| NSW 2014 Restricted Sc  | lid Waste CT2 (No Leaching) |                   | 16,000              |                  |                          |          |                |                  |               |              |                  |           |            |                   |                      |               |               |               |               |               |                 |               | 50                  |
| NSW 2014 General Solic  | Waste SCC1 (with leached)   |                   | 7,200               |                  |                          |          |                |                  |               |              |                  |           |            |                   |                      |               |               |               |               |               |                 |               | 50                  |
| Field ID                | Date                        |                   |                     |                  |                          |          |                |                  |               |              |                  |           |            |                   |                      |               |               |               |               |               |                 |               |                     |
| ASB2                    | 17/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| BH02_0.5                | 17/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| BH2_1.0                 | 17/11/2018                  | -                 | <0.5                | -                | <0.5                     | <0.5     | <0.5           | <0.5             | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             |                     |
| BH03_0.5                | 17/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| BH4_0.4<br>BH05_0.2-0.5 | 10/11/2018                  | -                 | - <0.5              | -                | <0.5                     | <0.5     | <0.5           | - <0.5           | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             |                     |
| TP01 0.2                | 10/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| TP01_0.9                | 10/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| TP02_0.1                | 10/11/2018                  | <0.2              | -                   | -                | -                        | -        | -              | -                | -             | <0.2         | -                | -         | <0.2       | <0.2              | -                    | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1            | <0.1          | <0.1                |
| TP02_0.4                | 10/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| TP03_0.2                | 10/11/2018                  | <0.2              | -                   | -                | -                        | -        | -              | -                | -             | <0.2         | -                | -         | <0.2       | <0.2              | -                    | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1            | <0.1          | <0.1                |
| TP03_1.2                | 10/11/2018                  | -                 | <0.5                | -                | <0.5                     | <0.5     | <0.5           | <0.5             | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| TP03_ASB1               | 10/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             |               | -             | -               | -             |                     |
| TP04_0.1                | 10/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    |               | -             | -             | -             | -             | -               | -             |                     |
| TP05 0.1                | 10/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| TP05_0.9                | 10/11/2018                  | -                 | <0.5                | -                | <0.5                     | <0.5     | <0.5           | <0.5             | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| TP06_0.1                | 10/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| TP06_0.3                | 10/11/2018                  | -                 | <0.5                | -                | <0.5                     | <0.5     | <0.5           | <0.5             | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| TP07_0.1                | 10/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             |                     |
| TP07_0.4                | 10/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| TP07_0.6                | 10/11/2018                  | -                 | - <0.5              | -                | <0.5                     | <0.5     | <0.5           | - <0.5           | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             |                     |
| TP09 0.3                | 10/11/2018                  | -                 |                     | -                |                          |          |                | -                | _             | -            | _                | -         | _          | -                 | _                    | -             | -             | -             | -             | _             | _               | _             | -                   |
| TP10 0.1                | 10/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| TP11_0.2                | 10/11/2018                  | <0.2              | -                   | -                | -                        | -        | -              | -                | -             | <0.2         | -                | -         | <0.2       | <0.2              | -                    | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1            | <0.1          | <0.1                |
| TP11_1.2                | 10/11/2018                  | -                 | <0.5                | -                | <0.5                     | <0.5     | <0.5           | <0.5             | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| TP12_0.2                | 10/11/2018                  | <0.2              | -                   | -                | -                        | -        | -              | -                | -             | <0.2         | -                | -         | <0.2       | <0.2              | -                    | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1            | <0.1          | <0.1                |
| TP13_0.1                | 17/11/2018                  | <0.2              | <0.5                | -                | <0.5                     | <0.5     | <0.5           | <0.5             | -             | <0.2         | -                | -         | <0.2       | <0.2              | -                    | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1            | <0.1          | <0.1                |
| TP13_0.4                | 17/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             |                     |
| TP14_0.1<br>TP14_0.7    | 17/11/2018                  |                   | <0.5                | -                | <0.5                     | <0.5     | <0.5           | <0.5             | -             | -            | -                | -         | -          | -                 | -                    | -             |               |               | -             | -             | -               | -             |                     |
| TP15 0.1                | 17/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| <br>TP15_0.6            | 17/11/2018                  | <0.2              | <0.5                | -                | <0.5                     | <0.5     | <0.5           | <0.5             | -             | <0.2         | -                | -         | <0.2       | <0.2              | -                    | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1            | <0.1          | <0.1                |
| TP16_0.1                | 17/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| TP16_0.8                | 17/11/2018                  | -                 | <0.5                | -                | <0.5                     | <0.5     | <0.5           | <0.5             | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| TP17_0.1                | 17/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             |                     |
| TP17_0.5                | 17/11/2018                  | -                 | <0.5                | -                | <0.5                     | <0.5     | <0.5           | <0.5             | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             |                     |
| TP18_0.1                | 17/11/2018                  | <0.2              |                     | -                |                          | <05      |                |                  | -             | <0.2         | -                | -         | <0.2       | <0.2              | -                    | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1            | <0.1          | (0.1                |
| TP19 0.1                | 10/11/2018                  | -                 |                     | -                | -                        |          | -              | -                | _             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             |                     |
| TP19_0.3                | 10/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| TP20_0.1                | 17/11/2018                  | <0.2              | -                   | -                | -                        | -        | -              | -                | -             | <0.2         | -                | -         | <0.2       | <0.2              | -                    | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1            | <0.1          | <0.1                |
| QA100                   | 10/11/2018                  | <0.2              | <0.5                | -                | <0.5                     | <0.5     | <0.5           | <0.5             | -             | <0.2         | -                | -         | <0.2       | <0.2              | -                    | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1            | <0.1          | <0.1                |
| QA200                   | 10/11/2018                  | -                 | <5                  | <5               | <5                       | -        | -              | <0.5             | <5            | -            | <0.05            | <0.05     | <0.2       | -                 | <0.05                | -             | -             | -             | -             | -             | -               | -             | <0.1                |
| QA300                   | 17/11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             | -                   |
| QA400                   | 1//11/2018                  | -                 | -                   | -                | -                        | -        | -              | -                | -             | -            | -                | -         | -          | -                 | -                    | -             | -             | -             | -             | -             | -               | -             |                     |
| Statistics              |                             |                   |                     |                  |                          |          |                |                  |               |              |                  |           |            |                   |                      |               |               |               |               |               |                 |               |                     |
| Number of Results       |                             | 10                | 15                  | 1                | 15                       | 14       | 14             | 15               | 1             | 10           | 1                | 1         | 11         | 10                | 1                    | 10            | 10            | 10            | 10            | 10            | 10              | 10            | 11                  |
| Minimum Concentratio    | n                           | <0.2              | <0.5                | <5               | <0.5                     | <0.5     | <0.5           | <0.5             | <5            | <0.2         | <0.05            | <0.05     | <0.2       | <0.2              | <0.05                | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1            | <0.1          | <0.1                |
| Maximum Concentratio    | n                           | <0.2              | <5                  | <5               | <5                       | <0.5     | <0.5           | <0.5             | <5            | <0.2         | <0.05            | <0.05     | <0.2       | <0.2              | <0.05                | <0.1          | <0.1          | <0.1          | <0.1          | <0.1          | <0.1            | <0.1          | <0.1                |
| Average Concentration   | *                           | 0.1               | 0.4                 |                  | 0.4                      | 0.25     | 0.25           | 0.25             |               | 0.1          |                  |           | 0.1        | 0.1               |                      | 0.05          | 0.05          | 0.05          | 0.05          | 0.05          | 0.05            | 0.05          | 0.05                |
| Standard Deviation *    |                             | 0                 | 0.58                |                  | 0.58                     | 0        | 0              | 0                |               | 0            |                  |           | 0          | 0                 |                      | 0             | 0             | 0             | 0             | 0             | 0               | 0             | 0                   |
| * A Non Detect Multipli | ar of 0.5 has been applied  |                   |                     |                  |                          |          |                |                  |               |              |                  |           |            |                   |                      |               |               |               |               |               |                 |               |                     |

Multiplier of 0.5 has been applied.



|  |             |         |         | BT           | ΈX             |            |              |                 |           | TRH       |         |                           |
|--|-------------|---------|---------|--------------|----------------|------------|--------------|-----------------|-----------|-----------|---------|---------------------------|
|  |             | Benzene | Toluene | Ethylbenzene | Xylene (m & p) | Xylene (o) | Xylene Total | 62 - 9 <b>2</b> | C10 - C14 | C15 - C28 | C29-C36 | +C10 - C36 (Sum of total) |
|  |             | μg/L    | μg/L    | μg/L         | μg/L           | μg/L       | μg/L         | μg/L            | μg/L      | μg/L      | μg/L    | μg/L                      |
| LOR  |             | 1       | 1       | 1            | 2              | 1          | 2            | 20              | 50        | 100       | 50      | 50                        |
| ANZECC 2000 Marine Water (90%)                     |             | 900     |         |              |                |            |              |                 |           |           |         |                           |
| NEPM 2013 Table 1C GILs, Marine Waters             |             | 500     |         |              |                |            |              |                 |           |           |         |                           |
| NEPM 2013 GW HSL Residential A&B, for Vapour Intru | sion, Sand  |         |         |              |                |            |              |                 |           |           |         |                           |
| 2-4m   |             | 800     |         |              |                |            |              |                 |           |           |         |                           |
| 4-8m   |             | 800     |         |              |                |            |              |                 |           |           |         |                           |
| >8m  |             | 900     |         |              |                |            |              |                 |           |           |         |                           |
| ANZECC 2000 Irrigation - Long-term trigger value   |             |         |         |              |                |            |              |                 |           |           |         |                           |
| PFAS NEMP 2018 Table 5 Interim marine 90%          |             |         |         |              |                |            |              |                 |           |           |         |                           |
| Field ID Location                                  | Sample Date |         |         |              |                |            |              |                 |           |           |         |                           |
| MW01   |             | <1      | <1      | <1           | <2             | <1         | <3           | <20             | <50       | <100      | <100    | <100                      |
| N/1/02   |             | -1      | _1      | ~1           | ~2             | ~1         | ~2           | <20             | ~=0       | ~100      | <100    | <100                      |

| MW01     |            | <1 | <1 | <1 | <2 | <1 | <3 | <20 | <50 | <100 | <100 | <100 |
|----------|------------|----|----|----|----|----|----|-----|-----|------|------|------|
| MW02     |            | <1 | <1 | <1 | <2 | <1 | <3 | <20 | <50 | <100 | <100 | <100 |
| MW03     | 23/11/2018 | <1 | <1 | <1 | <2 | <1 | <3 | <20 | <50 | <100 | <100 | <100 |
| QA100 MW | 02         | <1 | <1 | <1 | <2 | <1 | <3 | <20 | <50 | <100 | <100 | <100 |
| QA200 MW | 02         | <1 | <2 | <2 | <2 | <2 | <2 | <20 | <50 | <100 | <50  | <50  |

| Statistical Summary     |    |    |    |    |    |    |     |     |      |      |      |
|-------------------------|----|----|----|----|----|----|-----|-----|------|------|------|
| Maximum Concentration   | <1 | <2 | <2 | <2 | <2 | <3 | <20 | <50 | <100 | <100 | <100 |
| Average Concentration * | <1 | <2 | <2 | <2 | <2 | <3 | <20 | <50 | <100 | <100 | <100 |
| Standard Deviation *    | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0    | 11   | 11   |



|                             |                              |             |              |              | CRC (        | Care TRH Frac | tions                      |                      |                               |                          |              | PAH              |            |                     |
|-----------------------------|------------------------------|-------------|--------------|--------------|--------------|---------------|----------------------------|----------------------|-------------------------------|--------------------------|--------------|------------------|------------|---------------------|
|                             |                              |             | с6-с10<br>пд | с10-С16<br>П | п<br>С16-С34 | с34-С40<br>Г  | 도 C10 - C40 (Sum of total) | F1: C6-C10 less BTEX | F2: >C10-C16 less Naphthalene | 면 Benzo(b+j)fluoranthene | Acenaphthene | E Acenaphthylene | Anthracene | 면 Benz(a)anthracene |
| LOR                         |                              |             | 20           | <u></u>      | 100          | 100           | 100                        | 20                   | 50                            | 1                        | 1            | 1                | 1          | 1                   |
| ANZECC 2000 Marine Wate     | er (90%)                     |             |              |              |              |               |                            |                      |                               |                          | <u> </u>     |                  | <u> </u>   | · ·                 |
| NEPM 2013 Table 1C GILs.    | Marine Waters                |             |              |              |              |               |                            |                      |                               |                          |              |                  |            |                     |
| NEPM 2013 GW HSL Reside     | ential A&B, for Vapour Intru | sion. Sand  |              |              |              |               |                            |                      |                               |                          |              |                  |            |                     |
| 2-4m                        |                              |             |              |              |              |               |                            | 1,000                | 1,000                         |                          |              |                  |            |                     |
| 4-8m                        |                              |             |              |              |              |               |                            | 1,000                | 1,000                         |                          |              |                  |            |                     |
| >8m                         |                              |             |              |              |              |               |                            | 1,000                | 1,000                         |                          |              |                  |            |                     |
| ANZECC 2000 Irrigation - Lo | ong-term trigger value       |             |              |              |              |               |                            |                      |                               |                          |              |                  |            |                     |
| PFAS NEMP 2018 Table 5 Ir   | nterim marine 90%            |             |              |              |              |               |                            |                      |                               |                          |              |                  |            |                     |
| Field ID                    | Location                     | Sample Date |              |              |              |               |                            |                      |                               |                          |              |                  |            |                     |
| MV                          | V01                          |             | <20          | <50          | <100         | <100          | <100                       | <20                  | <50                           | <1                       | <1           | <1               | <1         | <1                  |
| MV                          | N02                          | ]           | <20          | <50          | <100         | <100          | <100                       | <20                  | <50                           | <1                       | <1           | <1               | <1         | <1                  |
| MV                          | V03                          | 23/11/2018  | <20          | <50          | <100         | <100          | <100                       | <20                  | <50                           | <1                       | <1           | <1               | <1         | <1                  |
| QA100                       | MW02                         |             | <20          | <50          | <100         | <100          | <100                       | <20                  | <50                           | <1                       | <1           | <1               | <1         | <1                  |
| QA200                       | MW02                         |             | <20          | <100         | <100         | <100          | <100                       | <20                  | <100                          | <1.0                     | <1.0         | <1.0             | <1.0       | <1.0                |
| Statistical Summary         |                              |             |              |              |              |               |                            |                      |                               |                          |              |                  |            |                     |
| Maximum Concentration       |                              |             | <20          | <100         | <100         | <100          | <100                       | <20                  | <100                          | <1                       | <1           | <1               | <1         | <1                  |
|                             |                              |             |              |              |              |               |                            |                      |                               |                          |              |                  |            |                     |
| Average Concentration *     |                              |             | <20          | <100         | <100         | <100          | <100                       | <20                  | <100                          | <1                       | <1           | <1               | <1         | <1                  |

| FIEID | Location | Sample Date |     |      |      |      |      |     |      |    |
|-------|----------|-------------|-----|------|------|------|------|-----|------|----|
| MWG   | 01       |             | <20 | <50  | <100 | <100 | <100 | <20 | <50  | <  |
| MWO   | )2       |             | <20 | <50  | <100 | <100 | <100 | <20 | <50  | <  |
| MWO   | 03       | 23/11/2018  | <20 | <50  | <100 | <100 | <100 | <20 | <50  | <  |
| QA100 | MW02     |             | <20 | <50  | <100 | <100 | <100 | <20 | <50  | <  |
| QA200 | MW02     |             | <20 | <100 | <100 | <100 | <100 | <20 | <100 | <1 |

| Maximum Concentration   | <20 | <100 | <100 | <100 | <100 | <20 | <100 | < |
|-------------------------|-----|------|------|------|------|-----|------|---|
| Average Concentration * | <20 | <100 | <100 | <100 | <100 | <20 | <100 | < |
| Standard Deviation *    | 0   | 11   | 0    | 0    | 0    | 0   | 11   | ( |



|   |             |   |                  |                           |                          |                             |                            | PAH |                              |
|---|-------------|---|------------------|---------------------------|--------------------------|-----------------------------|----------------------------|-----|------------------------------|
|   |             | 时在1000000000000000000000000000000000000 | 면 Benzo(a)pyrene | 편<br>Benzo(g,h,i)perylene | 五人的 Benzo(k)fluoranthene | Chrysene<br><sup>T/Bň</sup> | 편<br>Dibenz(a,h)anthracene |     | Enorene<br>Fluorene<br>Mal/L |
| OR  |             | 0.5                                     | 0.5              | 1                         | 1                        | 1                           | 1                          | 1   | 1                            |
| ANZECC 2000 Marine Water (90%)                      |             | 0.0                                     | 0.0              | ÷                         | ÷                        | <u> </u>                    | ÷                          | -   | -                            |
| NEPM 2013 Table 1C GILs, Marine Waters              |             |   |                  |                           |                          |                             |                            |     |                              |
| NEPM 2013 GW HSL Residential A&B, for Vapour Intrus | ion, Sand   |   |                  |                           |                          |                             |                            |     |                              |
| 2-4m  | ,           |   |                  |                           |                          |                             |                            |     |                              |
| 4-8m  |             |   |                  |                           |                          |                             |                            |     |                              |
| >8m   |             |   |                  |                           |                          |                             |                            |     |                              |
| ANZECC 2000 Irrigation - Long-term trigger value    |             |   |                  |                           |                          |                             |                            |     |                              |
| PFAS NEMP 2018 Table 5 Interim marine 90%           |             |   |                  |                           |                          |                             |                            |     |                              |
| Field ID Location                                   | Sample Date |   |                  |                           |                          |                             |                            |     |                              |
| MW01  |             |   | <1               | <1                        | <1                       | <1                          | <1                         | <1  | <1                           |

| M     | W01  |            |      | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   |
|-------|------|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| M     | W02  |            |      | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   |
| M     | W03  | 23/11/2018 |      | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   |
| QA100 | MW02 |            |      | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   |
| QA200 | MW02 |            | <0.5 | <0.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <0.5 | <1.0 | <1.0 |

| Maximum Concentration   | <0.5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <10 | <1 | <1 | <1 |
|-------------------------|------|----|----|----|----|----|----|----|----|-----|----|----|----|
| Average Concentration * | <0.6 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <10 | <1 | <1 | <1 |
| Standard Deviation *    |      | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0  | 0  | 0  |

| Indeno(1,2,3-c,d)pyrene | Naphthalene | PAHs (Sum of total) | Phenanthrene | Pyrene |
|-------------------------|-------------|---------------------|--------------|--------|
| μg/L                    | μg/L        | μg/L                | μg/L         | µg/L   |
| 1                       | 1           | 0.5                 | 1            | 1      |
|                         | 90          |                     |              |        |
|                         | 50          |                     |              |        |
|                         |             |                     |              |        |
|                         |             |                     |              |        |
|                         |             |                     |              |        |
|                         |             |                     |              |        |
|                         |             |                     |              |        |



|  | Ē  |                    |                    |                              | Me                | tals                 |                    |                   |                 |
|--|----|--------------------|--------------------|------------------------------|-------------------|----------------------|--------------------|-------------------|-----------------|
|  |    | Arsenic (filtered) | cadmium (filtered) | chromium (III+VI) (filtered) | Copper (filtered) | g<br>Lead (filtered) | Mercury (filtered) | Nickel (filtered) | Zinc (filtered) |
| LOR  |    | 0.001              | 0.0001             | 0.001                        | 0.001             | 0.001                | 0.0001             | 0.001             | 0.005           |
| ANZECC 2000 Marine Water (90%)                             |    |                    | 0.014              |                              | 0.003             | 0.0066               | 0.0007             | 0.2               | 0.023           |
| NEPM 2013 Table 1C GILs, Marine Waters                     |    |                    | 0.0007             |                              | 0.0013            | 0.0044               | 0.0001             | 0.007             | 0.015           |
| NEPM 2013 GW HSL Residential A&B, for Vapour Intrusion, Sa | nd |                    |                    |                              |                   |                      |                    |                   |                 |
| 2-4m   |    |                    |                    |                              |                   |                      |                    |                   |                 |
| 4-8m   |    |                    |                    |                              |                   |                      |                    |                   |                 |
| >8m  |    |                    |                    |                              |                   |                      |                    |                   |                 |
| ANZECC 2000 Irrigation - Long-term trigger value           |    | 0.1                | 0.01               | 0.1                          | 0.2               | 2                    | 0.002              | 0.2               | 2               |
| PFAS NEMP 2018 Table 5 Interim marine 90%                  |    |                    |                    |                              |                   |                      |                    |                   |                 |

| Field ID | Location | Sample Date | -       |         |        |        |        |          |        |        |
|----------|----------|-------------|---------|---------|--------|--------|--------|----------|--------|--------|
| M        | W01      |             | < 0.001 | <0.0002 | 0.002  | 0.002  | <0.001 | < 0.0001 | <0.001 | <0.005 |
| M        | N02      |             | <0.001  | <0.0002 | <0.001 | <0.001 | <0.001 | <0.0001  | 0.001  | <0.005 |
| M        | N03      | 23/11/2018  | <0.001  | <0.0002 | 0.002  | 0.001  | <0.001 | <0.0001  | 0.004  | 0.006  |
| QA100    | MW02     |             | <0.001  | <0.0002 | <0.001 | <0.001 | <0.001 | <0.0001  | 0.002  | <0.005 |
| QA200    | MW02     |             | <0.001  | <0.0001 | <0.001 | 0.001  | <0.001 | <0.0001  | 0.001  | <0.005 |

| Maximum Concentration   | <0.001 | <0.0002 | 0.002 | 0.002 | <0.001 | <0.0001 | 0.004 | 0.006 |
|-------------------------|--------|---------|-------|-------|--------|---------|-------|-------|
| Average Concentration * | <0.001 | <0.0002 | 0.001 | 0.001 | <0.001 | <0.0001 | 0.002 | 0.003 |
| Standard Deviation *    | 0      | 0       | 0.001 | 0.001 | 0      | 0       | 0.001 | 0.002 |
|                         |        |         |       |       |        |         |       |       |

|   |            |   |                                      |  | Pe                                    | rfluorocarbo                           | ns                                   |                                     |                               |                                 |
|---|------------|---|--------------------------------------|--|---------------------------------------|--|--------------------------------------|-------------------------------------|-------------------------------|---------------------------------|
|   |            | 8 2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-<br>> MeFOSE) | Perfluorobutane sulfonic acid (PFBS) | Perfluoropentane sulfonic acid (PFPeS) | Perfluorohexane sulfonic acid (PFHxS) | Perfluoroheptane sulfonic acid (PFHpS) | Perfluorooctane sulfonic acid (PFOS) | Perfluorodecanesulfonic acid (PFDS) | Perfluorobutanoic acid (PFBA) | Perfluoropentanoic acid (PFPeA) |
| LOR   |            | 5E-05   | 0.01                                 | 0.01                                   | 0.01                                  | 0.01                                   | 0.01                                 | 0.01                                | 0.05                          | 0.01                            |
| ANZECC 2000 Marine Water (90%)                      |            | ••  |                                      |  |                                       |  |                                      |                                     |                               |                                 |
| NEPM 2013 Table 1C GILs, Marine Waters              |            |   |                                      |  |                                       |  |                                      |                                     |                               |                                 |
| NEPM 2013 GW HSL Residential A&B, for Vapour Intrus | sion, Sand |   |                                      |  |                                       |  |                                      |                                     |                               |                                 |
| 2-4m  |            |   |                                      |  |                                       |  |                                      |                                     |                               |                                 |
| 4-8m  |            |   |                                      |  |                                       |  |                                      |                                     |                               |                                 |
| >8m   |            |   |                                      |  |                                       |  |                                      |                                     |                               |                                 |
| ANZECC 2000 Irrigation - Long-term trigger value    |            |   |                                      |  |                                       |  |                                      |                                     |                               |                                 |
| PFAS NEMP 2018 Table 5 Interim marine 90%           |            |   |                                      |  |                                       |  | 2                                    |                                     |                               |                                 |

| Field ID | Location | Sample Date | _        |       |       |       |       |       |       |       |       |
|----------|----------|-------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|
| M        | W01      |             | <0.00005 | <0.01 | <0.01 | 0.02  | <0.01 | <0.01 | <0.01 | <0.05 | <0.01 |
| M        | N02      |             | <0.00005 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.05 | <0.01 |
| M        | N03      | 23/11/2018  | <0.00005 | <0.01 | <0.01 | 0.01  | <0.01 | <0.01 | <0.01 | <0.05 | <0.01 |
| QA100    | MW02     |             | <0.00005 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.05 | <0.01 |
| QA200    | MW02     |             | <0.00005 | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.1  | <0.02 |

#### Statistical Summary

| Maximum Concentration   | <5E-05 | <0.02 | <0.02 | 0.02 | <0.02 | <0.01 | <0.02 | <0.1 | <0.02 |
|-------------------------|--------|-------|-------|------|-------|-------|-------|------|-------|
| Average Concentration * | <5E-06 | <0.02 | <0.02 | 0.01 | <0.02 | <0.01 | <0.02 | <0.1 | <0.02 |
| Standard Deviation *    | 0      | 0     | 0     | 0.01 | 0     | 0     | 0     | 0    | 0     |

\* A Non Detect Multiplier of 0.5 has been applied.

#### **DWP** Architects Pyrmont NSW



|  |                                      |             |             |                 |             | Perfluorocark | oons        |             |             |             |   |
|--|--------------------------------------|-------------|-------------|-----------------|-------------|---------------|-------------|-------------|-------------|-------------|---|
|  | ත්<br>Perfluorohexanoic acid (PFHxA) | 편<br>편<br>기 | 편<br>T<br>기 | 편<br>T/A<br>T/A | 편<br>편<br>T | 편<br>편<br>가   | 편<br>편<br>기 | 편<br>T<br>기 | 편<br>편<br>기 | 편<br>편<br>기 | ත්<br>N-Methyl perfluorooctane sulfonamide (MeFOSA) |
| LOR  | 0.01                                 | 0.01        | 0.01        | 0.01            | 0.01        | 0.01          | 0.01        | 0.01        | 0.01        | 0.02        | 0.05  |
| ANZECC 2000 Marine Water (90%)                               |                                      |             |             |                 |             |               |             |             |             |             |   |
| NEPM 2013 Table 1C GILs, Marine Waters                       |                                      |             |             |                 |             |               |             |             |             |             |   |
| NEPM 2013 GW HSL Residential A&B, for Vapour Intrusion, Sand |                                      |             |             |                 |             |               |             |             |             |             |   |
| 2-4m   |                                      |             |             |                 |             |               |             |             |             |             |   |
| 4-8m   |                                      |             |             |                 |             |               |             |             |             |             |   |
| >8m  |                                      |             |             |                 |             |               |             |             |             |             |   |
| ANZECC 2000 Irrigation - Long-term trigger value             |                                      |             |             |                 |             |               |             |             |             |             |   |
| PFAS NEMP 2018 Table 5 Interim marine 90%                    |                                      |             | 632         |                 |             |               |             |             |             |             |   |

| Field ID | Location | Sample Date | _     |        |       |        |       |        |        |       |        |       |       |
|----------|----------|-------------|-------|--------|-------|--------|-------|--------|--------|-------|--------|-------|-------|
| M        | W01      |             | <0.01 | <0.01  | <0.01 | < 0.01 | <0.01 | < 0.01 | <0.01  | <0.01 | < 0.01 | <0.05 | <0.05 |
| M        | W02      |             | <0.01 | < 0.01 | <0.01 | < 0.01 | <0.01 | <0.01  | < 0.01 | <0.01 | < 0.01 | <0.05 | <0.05 |
| M        | W03      | 23/11/2018  | <0.01 | < 0.01 | <0.01 | < 0.01 | <0.01 | <0.01  | < 0.01 | <0.01 | < 0.01 | <0.05 | <0.05 |
| QA100    | MW02     |             | <0.01 | < 0.01 | <0.01 | < 0.01 | <0.01 | <0.01  | < 0.01 | <0.01 | < 0.01 | <0.05 | <0.05 |
| QA200    | MW02     |             | <0.02 | <0.02  | <0.01 | <0.02  | <0.02 | <0.02  | <0.02  | <0.02 | < 0.05 | <0.02 | <0.05 |

| Statistical Summary     |       |       |       |       |       |       |       |       |       |       |       |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Maximum Concentration   | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.05 | <0.05 |
| Average Concentration * | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.05 | <0.05 |
| Standard Deviation *    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |

|  |            |  |   |   |  | Perf                                      | luorocarbons                               | 6                                     |   |             |                           |                       |
|--|------------|--|---|---|--|---|--|---------------------------------------|---|-------------|---------------------------|-----------------------|
|  |            | N-Ethyl perfluorooctane sulfonamide (EtFOSA) | N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE) | N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | ,<br>6:2 Fluorotelomer Sulfonate (6:2 FtS) | 8:2 Fluorotelomer sulfonate (8:2 FtS) | 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | Sum of PFAS | Sum of PFAS (WA DER List) | Sum of PFHxS and PFOS |
| IOR  |            | 0.05   | 0.05  | 0.02  | 0.02   | 0.01                                      | 0.05                                       | 0.01                                  | 0.01  | 0.01        | 0.01                      | 0.01                  |
| ANZECC 2000 Marine Water (90%)                     |            |  |   | 0.01  | 0.01   | 0.01                                      |  | 0.01                                  |   | 0.01        |                           |                       |
| NEPM 2013 Table 1C GILs, Marine Waters             |            |  |   |   |  |   |  |                                       |   |             |                           |                       |
| NEPM 2013 GW HSL Residential A&B, for Vapour Intru | sion, Sand |  |   |   |  |   |  |                                       |   |             |                           |                       |
| 2-4m   |            |  |   |   |  |   |  |                                       |   |             |                           |                       |
| 4-8m   |            |  |   |   |  |   |  |                                       |   |             |                           |                       |
| >8m  |            |  |   |   |  |   |  |                                       |   |             |                           |                       |
| ANZECC 2000 Irrigation - Long-term trigger value   |            |  |   |   |  |   |  |                                       |   |             |                           |                       |
| PFAS NEMP 2018 Table 5 Interim marine 90%          |            |  |   |   |  |   |  |                                       |   |             |                           |                       |

| Field ID | Location | Sample Date | -     |       |       |       |       |       |        |        |       |       |        |
|----------|----------|-------------|-------|-------|-------|-------|-------|-------|--------|--------|-------|-------|--------|
| M        | W01      |             | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.01  | <0.01  | <0.1  | <0.05 | 0.02   |
| M        | W02      |             | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | < 0.01 | < 0.01 | <0.1  | <0.05 | < 0.01 |
| M        | W03      | 23/11/2018  | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | < 0.01 | < 0.01 | <0.1  | <0.05 | 0.01   |
| QA100    | MW02     |             | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | < 0.01 | < 0.01 | <0.1  | <0.05 | < 0.01 |
| QA200    | MW02     |             | <0.05 | <0.05 | <0.02 | <0.02 | <0.05 | <0.05 | <0.05  | <0.05  | <0.01 | <0.01 | < 0.01 |

| Statistical Summary     |          |       |       |       |       |       |       |       |      |       |      |
|-------------------------|----------|-------|-------|-------|-------|-------|-------|-------|------|-------|------|
| Maximum Concentration   | <0.05    | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1 | <0.05 | 0.02 |
| Average Concentration * | <0.05    | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1 | <0.05 | 1.02 |
| Standard Deviation *    | 0        | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0    | 0     | 0    |
|                         | <b>-</b> |       |       |       |       |       |       |       |      |       |      |

|          | A   | В  | С           | D                                    | E         | F                       | G  | H   |                          | J              | K             | L     |       |
|----------|---|--|-------------|--------------------------------------|-----------|-------------------------|--|---|--------------------------|----------------|---------------|-------|-------|
| 1        |   |  |             | U                                    | CL Statis | tics for Unc            | ensored Full                             | Data Sets   |                          |                |               |       |       |
| 2        |   |  |             |                                      |           |                         |  |   |                          |                |               |       |       |
| 3        |   | User Selected Options Kyeemagh Infants School: TRH C16-C34 85% UCL Excluding Hotspots          |             |                                      |           |                         |  |   |                          |                |               |       |       |
| 4        | Date/Time of Computation ProUCL 5.112/12/2018 5:18:13 PM                    |  |             |                                      |           |                         |  |   |                          |                |               |       |       |
| 5        |   |  | From File   | 627289, 628416, ES1833866, ES1834552 |           |                         |  |   |                          |                |               |       |       |
| 6        |   | Ful  | I Precision |                                      |           |                         |  |   |                          |                |               |       |       |
| 7        |   | Confidence   | Coefficient | 95%                                  |           |                         |  |   |                          |                |               |       |       |
| 8        | Number o  | of Bootstrap (   | Operations  | 2000                                 |           |                         |  |   |                          |                |               |       |       |
| 9        |   |  |             |                                      |           |                         |  |   |                          |                |               |       |       |
| 10       | <u></u>   |  |             |                                      |           |                         |  |   |                          |                |               |       |       |
| 11       | CU  | 20   |             |                                      |           |                         |  |   |                          |                |               |       |       |
| 12       |   |  |             |                                      |           |                         |  |   |                          |                |               |       |       |
| 13       | General Statistics  |  |             |                                      |           |                         |  |   |                          |                |               |       |       |
| 14       |   |  | Iotai       | Number of Obse                       | ervations | 31                      |  | Number of Distinct Observations 4                   |                          |                |               |       |       |
| 15       |   |  |             |                                      | A:        | Number of Missing Obser |  |   |                          |                |               | 0     |       |
| 16       |   | Minir  |             |                                      |           |                         |  | Mean 114  |                          |                |               |       |       |
| 17       | Maximum   |  |             |                                      |           | 300                     |  |   | Median 100               |                |               |       |       |
| 18       | SD  |  |             |                                      |           | 53.47                   |  |   | Std. Error of Mean 9.603 |                |               |       |       |
| 19       | 19 Coefficient of Variation 0.467   |  |             |                                      |           |                         |  |   | Skewness                 | 3.90           | ונ            |       |       |
| 20       |   |  |             |                                      |           |                         |  |   |                          |                |               |       |       |
| 21       |   |  |             | henine Mills Teet                    | Ctatistic |                         | GOF Test                                 |   |                          |                |               |       |       |
| 22       |   | Shapiro Wilk Test Statistic  |             |                                      |           |                         |  | Data Na   |                          |                |               |       |       |
| 23       |   |  | 5% 5        |                                      | 0.929     |                         | Data No                                  | Lilliofore COE Test                                 |                          |                |               |       |       |
| 24       |   |  | F           | Lilliefors Test                      | 0.51      |                         | Data Not Normal at 5% Significance Lovel |   |                          |                |               |       |       |
| 25       | 5% Lilliefors Critical Value 0.156 Data Not Normal at 5% Significance Level |  |             |                                      |           |                         |  |   |                          |                |               |       |       |
| 26       | Data Not Normal at 5% Significance Level                                    |  |             |                                      |           |                         |  |   |                          |                |               |       |       |
| 27       | Assuming Normal Distribution  |  |             |                                      |           |                         |  |   |                          |                |               |       |       |
| 28       |   | Assuming Normal Distribution   |             |                                      |           |                         |  |   |                          |                |               |       |       |
| 29       | 95% Normal UCL  |  |             |                                      |           | 130.8                   | 30.8 95% Adjusted OF TUCL (Chep. 190     |   |                          |                |               | 127 5 | :     |
| 30       |   |  |             |                                      |           | 150.8                   |  |   | 95% Modifi               |                | ncon 1078)    | 137.5 | ,     |
| 31       |   |  |             |                                      |           |                         |  |   | 35 /6 WOULIN             | eu-1 OCL (301  | 115011-1978)  | 131.9 | ,<br> |
| 32       |   |  |             |                                      |           | Gamma                   | GOF Test                                 |   |                          |                |               |       |       |
| 33       | AD Test Statistic 10.01 Andorran Darling Comma COE Test                     |  |             |                                      |           |                         |  |   |                          |                |               |       |       |
| 34       |   |  |             | 5% A-D Critic                        | al Value  | 0 746                   | D  | ata Not Gam   | ma Distribut             | ed at 5% Sign  | nificance Lev |       |       |
| 35       | K-S Test {  |  |             |                                      | Statistic | 0.519                   |  | Kolmogorov-Smirnov Gamma GOF Test                   |                          |                |               |       |       |
| 30       | 5% K-S Critical Value   |  |             |                                      |           | 0.158                   | D  | Data Not Gamma Distributed at 5% Significance Level |                          |                |               |       |       |
| ა/<br>აი |   | Data Not Gamma Distributed at 5% Significance Level  |             |                                      |           |                         |  |   |                          |                |               |       |       |
| აშ<br>20 |   |  |             |                                      |           |                         |  |   |                          |                |               |       |       |
| 39<br>40 | l   | Gamma Statistics   |             |                                      |           |                         |  |   |                          |                |               |       |       |
| 40<br>/1 |   | k hat (MLE)  |             |                                      |           | 9.316                   |  | k star (bias corrected MLE) 8.4                     |                          |                |               |       | 36    |
| 41       | Theta hat (MLE)   |  |             |                                      | 12.29     |                         |  | Theta star (bias corrected MLE) 13                  |                          |                |               |       |       |
| 42<br>12 | nu hat (MLE)  |  |             |                                      | 577.6     |                         | nu star (bias corrected) 523             |   |                          |                |               |       |       |
| 43<br>11 | MLE Mean (bias corrected)   |  |             |                                      | 114.5     |                         | MLE Sd (bias corrected) 39.43            |   |                          |                |               | 3     |       |
| 44       |   |  |             |                                      | )         |                         |  |   | Approximate              | Chi Square     | Value (0.05)  | 471   |       |
| 40       |   |  | Adius       | sted Level of Siar                   | nificance | 0.0413                  |  |   | A                        | djusted Chi So | quare Value   | 468.3 |       |
| 40       |   |  | .,          | 9.                                   |           | -                       | 1  |   |                          |                |               |       |       |
| 4/<br>/2 | Assuming Gamma Distribution   |  |             |                                      |           |                         |  |   |                          |                |               |       |       |
| +0<br>⊿0 | 9   | 95% Approximate Gamma UCL (use when n>=50)) 127.2 95% Adjusted Gamma UCL (use when n<50) 127.9 |             |                                      |           |                         |  |   |                          |                | )             |       |       |
| 49<br>50 |   | 1. I   |             | (                                    | //        |                         | <u> </u>                                 |   | ,                        | - (            |               |       |       |
| 50       |   |  |             |                                      |           |                         |  |   |                          |                |               |       |       |

|    | А   | В  | С        | D              | E              | F                            | G   | Н        |             | J              | K           | L     |  |
|----|---|--|----------|----------------|----------------|------------------------------|---|----------|-------------|----------------|-------------|-------|--|
| 51 |   | Lognormal GOF Test   |          |                |                |                              |   |          |             |                |             |       |  |
| 52 |   |  | S        | hapiro Wilk 7  | Fest Statistic | 0.322                        | Shapiro Wilk Lognormal GOF Test             |          |             |                |             |       |  |
| 53 |   |  | 5% S     | hapiro Wilk C  | Critical Value | 0.929                        | Data Not Lognormal at 5% Significance Level |          |             |                |             |       |  |
| 54 |   |  |          | Lilliefors     | Fest Statistic | 0.515                        | Lilliefors Lognormal GOF Test               |          |             |                |             |       |  |
| 55 |   |  | 5        | % Lilliefors C | Critical Value | 0.156                        |   | Data Not | Lognormal a | t 5% Significa | ance Level  |       |  |
| 56 | Data Not Lognormal at 5% Significance Level   |  |          |                |                |                              |   |          |             |                |             |       |  |
| 57 |   |  |          |                |                |                              |   |          |             |                |             |       |  |
| 58 |   | Lognormal Statistics   |          |                |                |                              |   |          |             |                |             |       |  |
| 59 |   |  |          | Minimum of l   | _ogged Data    | 4.605                        | Mean of logged Data 4.                      |          |             |                |             |       |  |
| 60 |   |  | Ν        | Maximum of L   | _ogged Data    | 5.858                        | SD of logged Data 0.1                       |          |             |                |             | 0.284 |  |
| 61 |   |  |          |                |                |                              |   |          |             |                |             |       |  |
| 62 | Assuming Lognormal Distribution   |  |          |                |                |                              |   |          |             |                |             |       |  |
| 63 |   |  |          |                | 95% H-UCL      | 123.8                        | 90% Chebyshev (MVUE) UCL                    |          |             |                |             | 130.3 |  |
| 64 | 95% Chebyshev (MVUE) UCL  |  |          |                |                | 138.2                        | 97.5% Chebyshev (MVUE) UCL 149.2            |          |             |                |             | 149.2 |  |
| 65 |   |  | 99%      | Chebyshev (    | MVUE) UCL      | 170.8                        |   |          |             |                |             |       |  |
| 66 |   |  |          |                |                |                              |   |          |             |                |             |       |  |
| 67 | Nonparametric Distribution Free UCL Statistics  |  |          |                |                |                              |   |          |             |                |             |       |  |
| 68 | Data do not follow a Discernible Distribution (0.05)  |  |          |                |                |                              |   |          |             |                |             |       |  |
| 69 |   |  |          |                |                |                              |   |          |             |                |             |       |  |
| 70 |   | Nonparametric Distribution Free UCLs   |          |                |                |                              |   |          |             |                |             |       |  |
| 71 | 95% CLT UCL   |  |          |                |                | 130.3                        | 95% Jackknife UCL                           |          |             |                |             | 130.8 |  |
| 72 | 95% Standard Bootstrap UCL  |  |          |                | N/A            | 95% Bootstrap-t UCL          |   |          |             |                | N/A         |       |  |
| 73 | 95% Hall's Bootstrap UCL  |  |          |                | N/A            | 95% Percentile Bootstrap UCL |   |          |             |                | N/A         |       |  |
| 74 | 95% BCA Bootstrap UCL   |  |          |                |                | N/A                          |   |          |             |                |             |       |  |
| 75 | 90% Chebyshev(Mean, Sd) UCL   |  |          |                |                | 143.3                        |   |          | 95% Ch      | ebyshev(Me     | an, Sd) UCL | 156.4 |  |
| 76 |   |  | 97.5% Ch | ebyshev(Me     | an, Sd) UCL    | 174.5                        |   |          | 99% Ch      | ebyshev(Mea    | an, Sd) UCL | 210.1 |  |
| 77 |   |  |          |                |                |                              |   |          |             |                |             |       |  |
| 78 |   | Suggested UCL to Use   |          |                |                |                              |   |          |             |                |             |       |  |
| 79 | 95% Student's-t UCL   |  |          |                |                | 130.8                        | or 95% Modified-t UCL 131.9                 |          |             |                |             | 131.9 |  |
| 80 |   |  |          |                |                |                              |   |          |             |                |             |       |  |
| 81 | I   | Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. |          |                |                |                              |   |          |             |                |             |       |  |
| 82 | Recommendations are based upon data size, data distribution, and skewness.  |  |          |                |                |                              |   |          |             |                |             |       |  |
| 83 | These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).                  |  |          |                |                |                              |   |          |             |                |             |       |  |
| 84 | However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician. |  |          |                |                |                              |   |          |             |                |             |       |  |
| 85 |   |  |          |                |                |                              |   |          |             |                |             |       |  |
|    | A         | В             | С            | D                  | E           | F             | G             | Н             |               | J               | K             | L     |     |
|----|-----------|---------------|--------------|--------------------|-------------|---------------|---------------|---------------|---------------|-----------------|---------------|-------|-----|
| 1  |           |               |              | L                  | JCL Statis  | tics for Unc  | ensored Ful   | Data Sets     |               |                 |               |       |     |
| 2  |           |               |              |                    |             |               |               |               |               |                 |               |       |     |
| 3  |           | User Sele     | cted Options | Kyeemagh Infa      | nts Schoo   | ol: Nickel 95 | % UCL Exclu   | iding Hotspot | S             |                 |               |       |     |
| 4  | Da        | te/Time of Co | omputation   | ProUCL 5.112/      | 12/2018 3   | :11:33 PM     |               |               |               |                 |               |       |     |
| 5  |           |               | From File    | 627289, 62841      | 6, ES183    | 3866, ES183   | 34552         |               |               |                 |               |       |     |
| 6  |           | Ful           | II Precision | OFF                |             |               |               |               |               |                 |               |       |     |
| 7  |           | Confidence    | Coefficient  | 95%                |             |               |               |               |               |                 |               | -     |     |
| 8  | Number of | of Bootstrap  | Operations   | 2000               |             |               |               |               |               |                 |               |       |     |
| 9  |           |               |              | 1                  |             |               |               |               |               |                 |               |       |     |
| 10 |           |               |              |                    |             |               |               |               |               |                 |               |       |     |
| 11 | C0        |               |              |                    |             |               |               |               |               |                 |               |       |     |
| 12 |           |               |              |                    |             |               |               |               |               |                 |               |       |     |
| 13 |           |               |              |                    |             | General       | Statistics    |               |               |                 |               |       |     |
| 14 |           |               | Total        | Number of Obs      | ervations   | 30            |               |               | Numbe         | r of Distinct C | bservations   | 6     |     |
| 15 |           |               |              |                    |             |               |               |               | Number        | of Missing C    | bservations   | 0     |     |
| 16 |           |               |              |                    | Minimum     | 2             |               |               |               |                 | Mean          | 6.2   | .87 |
| 17 |           |               |              | Ν                  | Maximum     | 17            |               |               |               |                 | Median        | 5     |     |
| 12 |           |               |              |                    | SD          | 3.702         |               |               |               | Std. E          | rror of Mean  | 0.6   | 576 |
| 19 |           |               |              | Coefficient of     | Variation   | 0.589         |               |               |               |                 | Skewness      | 1.9   | 55  |
| 20 |           |               |              |                    |             |               | I             |               |               |                 |               |       |     |
| 20 |           |               |              |                    |             | Normal        | GOF Test      |               |               |                 |               |       |     |
| 21 |           |               | S            | hapiro Wilk Tes    | t Statistic | 0.587         |               |               | Shapiro Wi    | lk GOF Test     |               |       |     |
| 22 |           |               | 5% S         | hapiro Wilk Criti  | cal Value   | 0.927         |               | Data No       | t Normal at § | 5% Significan   | ce Level      |       |     |
| 20 |           |               |              | Lilliefors Tes     | t Statistic | 0.469         |               |               | Lilliefors    | GOF Test        |               |       |     |
| 24 |           |               | 5            | % Lilliefors Criti | cal Value   | 0.159         |               | Data No       | t Normal at § | 5% Significan   | ce Level      |       |     |
| 26 |           |               |              |                    | Data Not    | Normal at 5   | 5% Significa  | nce Level     |               |                 |               |       |     |
| 27 |           |               |              |                    |             |               |               |               |               |                 |               |       |     |
| 28 |           |               |              |                    | As          | suming Nor    | mal Distribut | ion           |               |                 |               |       |     |
| 29 |           |               | 95% No       | ormal UCL          |             |               |               | 95%           | UCLs (Adju    | sted for Skew   | wness)        |       |     |
| 30 |           |               |              | 95% Studen         | nt's-t UCL  | 7.435         |               | !             | 95% Adjuste   | d-CLT UCL (     | Chen-1995)    | 7.6   | 56  |
| 31 |           |               |              |                    |             |               |               |               | 95% Modifie   | ed-t UCL (Joh   | nnson-1978)   | 7.4   | 75  |
| 32 |           |               |              |                    |             |               |               |               |               |                 |               |       |     |
| 33 |           |               |              |                    |             | Gamma         | GOF Test      |               |               |                 |               |       |     |
| 34 |           |               |              | A-D Tes            | t Statistic | 5.738         |               | Ander         | son-Darling   | Gamma GO        | F Test        |       |     |
| 35 |           |               |              | 5% A-D Criti       | cal Value   | 0.749         | D             | ata Not Gam   | ma Distribut  | ed at 5% Sigi   | nificance Lev | el    |     |
| 36 |           |               |              | K-S Tes            | t Statistic | 0.447         |               | Kolmog        | orov-Smirno   | ov Gamma G      | OF Test       |       |     |
| 37 |           |               |              | 5% K-S Criti       | cal Value   | 0.161         | D             | ata Not Gam   | ma Distribut  | ed at 5% Sigi   | nificance Lev | el    |     |
| 38 |           |               |              | Data               | Not Gamr    | na Distribut  | ed at 5% Sig  | nificance Le  | vel           |                 |               |       |     |
| 39 |           |               |              |                    |             |               |               |               |               |                 |               |       |     |
| 40 |           |               |              |                    |             | Gamma         | Statistics    |               |               |                 |               |       |     |
| 41 |           |               |              | k h                | nat (MLE)   | 4.243         |               |               | k :           | star (bias cor  | rected MLE)   | 3.8   | 341 |
| 42 |           |               |              | Theta h            | nat (MLE)   | 1.482         |               |               | Theta :       | star (bias cor  | rected MLE)   | 1.6   | 637 |
| 43 |           |               |              | nu h               | nat (MLE)   | 254.6         |               |               |               | nu star (bia    | s corrected)  | 230.4 | 4   |
| 44 |           |               | M            | LE Mean (bias c    | orrected)   | 6.287         |               |               |               | MLE Sd (bia     | s corrected)  | 3.2   | 208 |
| 45 |           |               |              |                    |             |               |               | 1             | Approximate   | Chi Square      | Value (0.05)  | 196.3 | 3   |
| 46 |           |               | Adjus        | sted Level of Sig  | nificance   | 0.041         |               |               | Ac            | djusted Chi S   | quare Value   | 194.5 | 5   |
| 47 |           |               |              |                    |             |               |               |               |               |                 |               |       |     |
| 48 |           |               |              |                    | Ass         | suming Gam    | nma Distribu  | tion          |               |                 |               |       |     |
| 49 | g         | 5% Approxir   | nate Gamma   | UCL (use wher      | n n>=50))   | 7.38          |               | 95% Ad        | justed Gamr   | na UCL (use     | when n<50)    | 7.4   | 49  |
| 50 |           |               |              |                    |             |               |               |               |               |                 |               |       |     |

|    | А  | В           | С              | D               | E              | F              | G               | Н               |               | J              | K                | L     |
|----|----|-------------|----------------|-----------------|----------------|----------------|-----------------|-----------------|---------------|----------------|------------------|-------|
| 51 |    |             |                |                 |                | Lognormal      | GOF Test        |                 |               |                |                  |       |
| 52 |    |             | S              | hapiro Wilk 7   | Test Statistic | 0.672          |                 | Shap            | piro Wilk Log | inormal GOF    | Test             |       |
| 53 |    |             | 5% S           | hapiro Wilk C   | Critical Value | 0.927          |                 | Data Not        | Lognormal a   | t 5% Significa | ance Level       |       |
| 54 |    |             |                | Lilliefors 7    | Fest Statistic | 0.422          |                 | Lil             | liefors Logn  | ormal GOF T    | est              |       |
| 55 |    |             | 5              | % Lilliefors C  | Critical Value | 0.159          |                 | Data Not        | Lognormal a   | t 5% Significa | ance Level       |       |
| 56 |    |             |                |                 | Data Not L     | ognormal at    | 5% Significa    | ance Level      |               |                |                  |       |
| 57 |    |             |                |                 |                |                |                 |                 |               |                |                  |       |
| 58 |    |             |                |                 |                | Lognorma       | I Statistics    |                 |               |                |                  |       |
| 59 |    |             |                | Minimum of l    | Logged Data    | 0.693          |                 |                 |               | Mean of        | logged Data      | 1.716 |
| 60 |    |             | Ν              | Maximum of L    | Logged Data    | 2.833          |                 |                 |               | SD of          | logged Data      | 0.477 |
| 61 |    |             |                |                 |                |                |                 |                 |               |                |                  |       |
| 62 |    |             |                |                 | Assı           | uming Logno    | rmal Distribu   | ution           |               |                |                  |       |
| 63 |    |             |                |                 | 95% H-UCL      | 7.394          |                 |                 | 90%           | Chebyshev (    | MVUE) UCL        | 7.89  |
| 64 |    |             | 95%            | Chebyshev (     | MVUE) UCL      | 8.654          |                 |                 | 97.5%         | Chebyshev (    | MVUE) UCL        | 9.713 |
| 65 |    |             | 99%            | Chebyshev (     | MVUE) UCL      | 11.79          |                 |                 |               |                |                  |       |
| 66 |    |             |                |                 |                |                |                 |                 |               |                |                  |       |
| 67 |    |             |                |                 | Nonparame      | etric Distribu | tion Free UC    | L Statistics    |               |                |                  |       |
| 68 |    |             |                |                 | Data do not f  | ollow a Disc   | ernible Distri  | ibution (0.05   | 5)            |                |                  |       |
| 69 |    |             |                |                 |                |                |                 |                 |               |                |                  |       |
| 70 |    |             |                |                 | Nonpa          | rametric Dist  | tribution Free  | e UCLs          |               |                |                  |       |
| 71 |    |             |                | 95              | 5% CLT UCL     | 7.398          |                 |                 |               | 95% Ja         | ckknife UCL      | 7.435 |
| 72 |    |             | 95%            | Standard Bo     | ootstrap UCL   | 7.375          |                 |                 |               | 95% Boo        | tstrap-t UCL     | 7.903 |
| 73 |    |             | 9              | 5% Hall's Bo    | ootstrap UCL   | 7.467          |                 |                 | 95% I         | Percentile Bo  | otstrap UCL      | 7.387 |
| 74 |    |             |                | 95% BCA Bo      | ootstrap UCL   | 7.653          |                 |                 |               |                |                  |       |
| 75 |    |             | 90% Ch         | ebyshev(Me      | an, Sd) UCL    | 8.314          |                 |                 | 95% Ch        | ebyshev(Me     | an, Sd) UCL      | 9.233 |
| 76 |    |             | 97.5% Ch       | ebyshev(Me      | an, Sd) UCL    | 10.51          |                 |                 | 99% Ch        | ebyshev(Me     | an, Sd) UCL      | 13.01 |
| 77 |    |             |                |                 |                |                |                 |                 |               |                |                  |       |
| 78 |    |             |                |                 |                | Suggested      | UCL to Use      |                 |               |                |                  |       |
| 79 |    |             |                | 95% Stu         | dent's-t UCL   | 7.435          |                 |                 |               | or 95% Mo      | dified-t UCL     | 7.475 |
| 80 |    |             |                |                 |                |                |                 |                 |               |                |                  |       |
| 81 |    | Note: Sugge | stions regard  | ling the selec  | ction of a 95% | UCL are pro    | ovided to help  | p the user to   | select the m  | nost appropria | ate 95% UCL      | •     |
| 82 |    |             | F              | Recommenda      | ations are bas | sed upon dat   | a size, data c  | distribution, a | and skewnes   | S.             |                  |       |
| 83 |    | These recor | mmendations    | s are based ι   | pon the resu   | Its of the sim | ulation studie  | es summariz     | ed in Singh,  | Maichle, and   | d Lee (2006).    |       |
| 84 | Ho | wever, simu | lations result | ts will not cov | ver all Real W | orld data set  | ts; for additio | nal insight th  | ne user may   | want to cons   | ult a statistici | an.   |
| 85 |    |             |                |                 |                |                |                 |                 |               |                |                  |       |

|          | А         | В              | С            | D                         | E                 | F             | G              | Н            |               | J               | K             | L        |
|----------|-----------|----------------|--------------|---------------------------|-------------------|---------------|----------------|--------------|---------------|-----------------|---------------|----------|
| 1        |           |                |              |                           | UCL Statis        | tics for Unc  | ensored Full   | Data Sets    |               |                 |               |          |
| 2        |           |                |              |                           |                   |               |                |              |               |                 |               |          |
| 3        |           | User Sele      | cted Options | Kyeemagh Infa             | atns Schoo        | l: B(a)P In F | ill Material 9 | 5% UCL       |               |                 |               |          |
| 4        | Da        | te/Time of Co  | omputation   | ProUCL 5.112              | /12/2018 3        | :16:45 PM     |                |              |               |                 |               |          |
| 5        |           |                | From File    | 627289, 6284 <sup>-</sup> | 16, ES1833        | 8866, ES183   | 34552          |              |               |                 |               |          |
| 6        |           | Ful            | Il Precision | OFF                       |                   |               |                |              |               |                 |               |          |
| 7        |           | Confidence     | Coefficient  | 95%                       |                   |               |                |              |               |                 |               |          |
| 8        | Number of | of Bootstrap ( | Operations   | 2000                      |                   |               |                |              |               |                 |               |          |
| 9        |           |                |              |                           |                   |               |                |              |               |                 |               |          |
| 10       |           |                |              |                           |                   |               |                |              |               |                 |               |          |
| 11       | CO        |                |              |                           |                   |               |                |              |               |                 |               |          |
| 12       |           |                |              |                           |                   | 0             | 0              |              |               |                 |               |          |
| 13       |           |                | Tatal        | Number of Obs             |                   | General       | Statistics     |              | N la sua la s |                 |               | 2        |
| 14       |           |                | lotal        | Number of Obs             | servations        | 41            |                |              | Numbe         | r of Distinct O | bservations   | 3        |
| 15       |           |                |              |                           | NA:               | 0.5           |                |              | Number        | r of Missing O  | bservations   | 0        |
| 16       |           |                |              |                           | winimum           | 0.5           |                |              |               |                 | Wedier        | 0.515    |
| 17       |           |                |              |                           |                   | 0.9           |                |              |               | 011 L-          | iviedian      | 0.0100   |
| 18       |           |                |              | Coofficient               | 5D<br>f.Voriotian | 0.0091        |                |              |               | Stu. Er         | Skowraat      | U.U I Uð |
| 19       |           |                |              | Coefficient of            | rvariation        | 0.134         |                |              |               |                 | Skewness      | 5.047    |
| 20       |           |                |              |                           |                   | Normal (      |                |              |               |                 |               |          |
| 21       |           |                |              | honiro Wilk Tor           | at Statistic      | 0.225         |                |              | Shapira Wi    |                 |               |          |
| 22       |           |                | 50/ C        |                           |                   | 0.235         |                | Data Na      | + Normal at l |                 |               |          |
| 23       |           |                | 5% 5         |                           |                   | 0.941         |                | Data No      |               |                 |               |          |
| 24       |           |                | 5            | Lilliefors Crit           | tical Value       | 0.555         |                | Data No      | t Normal at   | 5% Significant  |               |          |
| 25       |           |                | 5            |                           | Data Not          | Normal at F   | % Significar   |              |               |                 |               |          |
| 26       |           |                |              |                           | Data Not          |               |                |              |               |                 |               |          |
| 27       |           |                |              |                           | ۵۹                | sumina Nor    | mal Distribut  | ion          |               |                 |               |          |
| 28       |           |                | 95% No       | ormal UCL                 | 7.00              |               |                | 95%          | UCLs (Adiu    | isted for Skev  | vness)        |          |
| 29       |           |                |              | 95% Stude                 | nt's-t UCL        | 0.533         |                |              | 95% Adjuste   | ed-CLT UCL (    | Chen-1995)    | 0.541    |
| 3U<br>21 |           |                |              |                           |                   |               |                |              | 95% Modifi    | ed-t UCL (Joh   | nson-1978)    | 0.534    |
| 32       |           |                |              |                           |                   |               |                |              |               |                 | ,             |          |
| 32       |           |                |              |                           |                   | Gamma         | GOF Test       |              |               |                 |               |          |
| 34       |           |                |              | A-D Tes                   | st Statistic      | 14.49         |                | Ander        | son-Darling   | Gamma GOF       | - Test        |          |
| 35       |           |                |              | 5% A-D Crit               | ical Value        | 0.747         | D              | ata Not Gam  | ma Distribut  | ed at 5% Sigr   | nificance Lev | el       |
| 36       |           |                |              | K-S Tes                   | st Statistic      | 0.538         |                | Kolmog       | orov-Smirno   | ov Gamma GO     | OF Test       |          |
| 37       |           |                |              | 5% K-S Crit               | ical Value        | 0.137         | D              | ata Not Gam  | ma Distribut  | ed at 5% Sigr   | nificance Lev | el       |
| 38       |           |                |              | Data                      | Not Gamm          | na Distribut  | ed at 5% Sig   | nificance Le | vel           |                 |               |          |
| 39       |           |                |              |                           |                   |               |                |              |               |                 |               |          |
| 40       |           |                |              |                           |                   | Gamma         | Statistics     |              |               |                 |               |          |
| 41       |           |                |              | k                         | hat (MLE)         | 79.47         |                |              | k             | star (bias corr | ected MLE)    | 73.67    |
| 42       |           |                |              | Theta                     | hat (MLE)         | 0.00648       |                |              | Theta         | star (bias corr | ected MLE)    | 0.00699  |
| 43       |           |                |              | nu                        | hat (MLE)         | 6516          |                |              |               | nu star (bias   | s corrected)  | 6041     |
| 44       |           |                | MI           | E Mean (bias o            | corrected)        | 0.515         |                |              |               | MLE Sd (bias    | s corrected)  | 0.06     |
| 45       |           |                |              |                           | L. L. L.          |               |                |              | Approximate   | e Chi Square \  | /alue (0.05)  | 5861     |
| 46       |           |                | Adjus        | sted Level of Sig         | gnificance        | 0.0441        |                |              | A             | djusted Chi So  | quare Value   | 5855     |
| 47       |           |                |              |                           |                   |               |                |              |               |                 |               |          |
| 48       |           |                |              |                           | Ass               | uming Gam     | nma Distribut  | tion         |               |                 |               |          |
| 49       | 9         | 5% Approxin    | nate Gamma   | UCL (use whe              | n n>=50))         | 0.53          |                | 95% Ad       | justed Gamr   | ma UCL (use v   | when n<50)    | 0.531    |
| 50       |           |                |              |                           |                   |               |                |              |               |                 |               |          |

|    | А  | В            | С              | D               | E              | F              | G                | Н               |               | J              | К                 | L      |
|----|----|--------------|----------------|-----------------|----------------|----------------|------------------|-----------------|---------------|----------------|-------------------|--------|
| 51 |    |              |                |                 |                | Lognorma       | GOF Test         |                 |               |                |                   |        |
| 52 |    |              | S              | hapiro Wilk T   | Fest Statistic | 0.238          |                  | Shap            | oiro Wilk Log | normal GOF     | Test              |        |
| 53 |    |              | 5% S           | hapiro Wilk C   | Critical Value | 0.941          |                  | Data Not        | Lognormal a   | t 5% Significa | ance Level        |        |
| 54 |    |              |                | Lilliefors 7    | Fest Statistic | 0.537          |                  | Lil             | liefors Logno | ormal GOF To   | est               |        |
| 55 |    |              | 5              | 5% Lilliefors C | Critical Value | 0.137          |                  | Data Not        | Lognormal a   | t 5% Significa | ance Level        |        |
| 56 |    |              |                |                 | Data Not L     | ognormal at    | 5% Significa     | ance Level      |               |                |                   |        |
| 57 |    |              |                |                 |                |                |                  |                 |               |                |                   |        |
| 58 |    |              |                |                 |                | Lognorma       | I Statistics     |                 |               |                |                   |        |
| 59 |    |              |                | Minimum of L    | _ogged Data    | -0.693         |                  |                 |               | Mean of I      | logged Data       | -0.671 |
| 60 |    |              | Ν              | /laximum of L   | _ogged Data    | -0.105         |                  |                 |               | SD of I        | logged Data       | 0.105  |
| 61 |    |              |                |                 |                |                |                  |                 |               |                |                   |        |
| 62 |    |              |                |                 | Assı           | uming Logno    | ormal Distribu   | ution           |               |                |                   |        |
| 63 |    |              |                |                 | 95% H-UCL      | 0.529          |                  |                 | 90%           | Chebyshev (N   | MVUE) UCL         | 0.539  |
| 64 |    |              | 95%            | Chebyshev (     | MVUE) UCL      | 0.551          |                  |                 | 97.5%         | Chebyshev (N   | MVUE) UCL         | 0.567  |
| 65 |    |              | 99%            | Chebyshev (     | MVUE) UCL      | 0.598          |                  |                 |               |                |                   |        |
| 66 |    |              |                |                 |                |                |                  |                 |               |                |                   |        |
| 67 |    |              |                |                 | Nonparame      | etric Distribu | tion Free UC     | L Statistics    |               |                |                   |        |
| 68 |    |              |                |                 | Data do not f  | ollow a Disc   | ernible Distri   | ibution (0.05   | i)            |                |                   |        |
| 69 |    |              |                |                 |                |                |                  |                 |               |                |                   |        |
| 70 |    |              |                |                 | Nonpa          | rametric Dis   | tribution Free   | e UCLs          |               |                |                   |        |
| 71 |    |              |                | 95              | 5% CLT UCL     | 0.532          |                  |                 |               | 95% Jao        | ckknife UCL       | 0.533  |
| 72 |    |              | 95%            | Standard Bo     | otstrap UCL    | N/A            |                  |                 |               | 95% Boot       | tstrap-t UCL      | N/A    |
| 73 |    |              | 9              | 5% Hall's Bo    | otstrap UCL    | N/A            |                  |                 | 95%           | Percentile Bo  | otstrap UCL       | N/A    |
| 74 |    |              | !              | 95% BCA Bo      | otstrap UCL    | N/A            |                  |                 |               |                |                   |        |
| 75 |    |              | 90% Ch         | ebyshev(Me      | an, Sd) UCL    | 0.547          |                  |                 | 95% Ch        | ebyshev(Mea    | an, Sd) UCL       | 0.562  |
| 76 |    |              | 97.5% Ch       | ebyshev(Me      | an, Sd) UCL    | 0.582          |                  |                 | 99% Ch        | ebyshev(Mea    | an, Sd) UCL       | 0.622  |
| 77 |    |              |                |                 |                |                |                  |                 |               |                |                   |        |
| 78 |    |              |                |                 |                | Suggested      | UCL to Use       |                 |               |                |                   |        |
| 79 |    |              |                | 95% Stu         | dent's-t UCL   | 0.533          |                  |                 |               | or 95% Mo      | dified-t UCL      | 0.534  |
| 80 |    |              |                |                 |                |                |                  |                 |               |                |                   |        |
| 81 |    | Note: Sugge  | stions regard  | ing the selec   | tion of a 95%  | UCL are pro    | ovided to help   | p the user to   | select the m  | nost appropria | ate 95% UCL       |        |
| 82 |    |              | F              | Recommenda      | ations are bas | sed upon dat   | a size, data c   | distribution, a | and skewnes   | s.             |                   |        |
| 83 |    | These recor  | mmendations    | s are based u   | pon the resu   | Its of the sim | ulation studie   | es summariz     | ed in Singh,  | Maichle, and   | Lee (2006).       |        |
| 84 | Ho | owever, simu | lations result | s will not cov  | ver all Real W | orld data set  | ts; for addition | nal insight th  | e user may    | want to consu  | ılt a statisticia | an.    |
| 85 |    |              |                |                 |                |                |                  |                 |               |                |                   |        |

|                | A         | В            | С            | D                  | E             | F             | G              | Н             |              | J              | K             | L       |
|----------------|-----------|--------------|--------------|--------------------|---------------|---------------|----------------|---------------|--------------|----------------|---------------|---------|
| 1              |           |              |              |                    | UCL Statis    | tics for Unc  | ensored Full   | Data Sets     |              |                |               |         |
| 2              |           |              |              |                    | <u> </u>      |               | 050(110)       |               |              |                |               |         |
| 3              |           | User Sele    | cted Options | Kyeemagh I         | ntants Schoo  |               | 195% UCL       |               |              |                |               |         |
| 4              | Da        | te/Time of C |              | ProUCL 5.1         |               | :50:02 AM     | 4550           |               |              |                |               |         |
| 5              |           | <b>F</b>     |              | 627289, 628<br>OFF | 416, ES183    | 3800, ES 183  | 4552           |               |              |                |               |         |
| 6              |           | Fu           |              |                    |               |               |                |               |              |                |               |         |
| 7              | Numbor    | of Pootstrop |              | 95%                |               |               |                |               |              |                |               |         |
| 8              | Number    | ы воогенар   | Operations   | 2000               |               |               |                |               |              |                |               |         |
| 9              |           |              |              |                    |               |               |                |               |              |                |               |         |
| 10             | <u>C0</u> |              |              |                    |               |               |                |               |              |                |               |         |
| 11             | 00        |              |              |                    |               |               |                |               |              |                |               |         |
| 12             |           |              |              |                    |               | General       | Statistics     |               |              |                |               |         |
| 13             |           |              | Total        | Number of O        | bservations   | 41            |                |               | Numbe        | r of Distinct  | Observations  | 10      |
| 14             |           |              |              |                    |               |               |                |               | Number       | r of Missing ( | Observations  | 0       |
| 15             |           |              |              |                    | Minimum       | 2             |                |               |              |                | Mean          | 9.329   |
| 10             |           |              |              |                    | Maximum       | 130           |                |               |              |                | Median        | 5       |
| 12             |           |              |              |                    | SD            | 19.92         |                |               |              | Std. E         | Error of Mean | 3.112   |
| 10             |           |              |              | Coefficient        | of Variation  | 2.136         |                |               |              |                | Skewness      | 5.869   |
| 20             |           |              |              |                    |               |               |                |               |              |                |               |         |
| 20             |           |              |              |                    |               | Normal (      | GOF Test       |               |              |                |               |         |
| 22             |           |              | S            | hapiro Wilk T      | est Statistic | 0.267         |                |               | Shapiro Wi   | ilk GOF Tes    | t             |         |
| 23             |           |              | 5% S         | hapiro Wilk C      | ritical Value | 0.941         |                | Data No       | t Normal at  | 5% Significa   | nce Level     |         |
| 24             |           |              |              | Lilliefors T       | est Statistic | 0.412         |                |               | Lilliefors   | GOF Test       |               |         |
| 25             |           |              | 5            | % Lilliefors C     | ritical Value | 0.137         |                | Data No       | t Normal at  | 5% Significa   | nce Level     |         |
| 26             |           |              |              |                    | Data Not      | Normal at 5   | % Significar   | ice Level     |              |                |               |         |
| 27             |           |              |              |                    |               |               |                |               |              |                |               |         |
| 28             |           |              |              |                    | As            | suming Nori   | nal Distributi | ion           |              |                |               |         |
| 29             |           |              | 95% No       | ormal UCL          |               |               |                | 95%           | UCLs (Adju   | isted for Ske  | wness)        |         |
| 30             |           |              |              | 95% Stud           | lent's-t UCL  | 14.57         |                | ļ             | 95% Adjuste  | ed-CLT UCL     | (Chen-1995)   | 17.49   |
| 31             |           |              |              |                    |               |               |                |               | 95% Modifi   | ed-t UCL (Jo   | hnson-1978)   | 15.04   |
| 32             |           |              |              |                    |               |               |                |               |              |                |               |         |
| 33             |           |              |              |                    |               | Gamma         | GOF Test       | <b>A</b>      |              | 0              |               |         |
| 34             |           |              |              |                    | est Statistic | 9.792         | D              |               | son-Darling  | Gamma GC       |               | <u></u> |
| 35             |           |              |              | ט% א-D U<br>עפי    | finical value | 0.772         |                |               |              |                |               |         |
| 36             |           |              |              | r-o i<br>5% k_s c  | ritical Value | 0.434         | ·ח             | nulliug       | ma Distribut | red at 5% Sid  |               | ما      |
| 37             |           |              |              | D2                 | ta Not Gam    | na Distribute | ed at 5% Sig   | nificance I e | vel          |                |               |         |
| 38             |           |              |              | 50                 |               |               |                |               |              |                |               |         |
| 39             |           |              |              |                    |               | Gamma         | Statistics     |               |              |                |               |         |
| 40             |           |              |              |                    | k hat (MLE)   | 1.249         |                |               | k            | star (bias co  | rrected MLE)  | 1.174   |
| 41<br>40       |           |              |              | Thet               | a hat (MLE)   | 7.469         |                |               | Theta        | star (bias co  | rrected MLE)  | 7.947   |
| 42<br>12       |           |              |              | n                  | u hat (MLE)   | 102.4         |                |               |              | nu star (bi    | as corrected) | 96.26   |
| 43<br>44       |           |              | M            | LE Mean (bia       | s corrected)  | 9.329         |                |               |              | MLE Sd (bi     | as corrected) | 8.611   |
| 45             |           |              |              |                    |               |               |                |               | Approximate  | e Chi Square   | Value (0.05)  | 74.63   |
| 46             |           |              | Adjus        | sted Level of      | Significance  | 0.0441        |                |               | Ad           | djusted Chi S  | Square Value  | 73.93   |
| 47             |           |              |              |                    |               |               | 1              |               |              |                |               |         |
|                |           |              |              |                    | As            | suming Gam    | ma Distribut   | ion           |              |                |               |         |
| 48             |           |              |              |                    |               | •             |                |               |              |                |               |         |
| 48<br>49       | ç         | 95% Approxir | nate Gamma   | a UCL (use wi      | nen n>=50))   | 12.03         |                | 95% Ad        | usted Gamr   | ma UCL (use    | e when n<50)  | 12.15   |
| 48<br>49<br>50 | g         | 95% Approxir | mate Gamma   | a UCL (use wl      | nen n>=50))   | 12.03         |                | 95% Ad        | usted Gamr   | ma UCL (use    | e when n<50)  | 12.15   |

|    | А  | В            | С              | D               | E              | F              | G               | Н               |               | J              | К                 | L     |
|----|----|--------------|----------------|-----------------|----------------|----------------|-----------------|-----------------|---------------|----------------|-------------------|-------|
| 51 |    |              |                |                 |                | Lognormal      | GOF Test        |                 |               |                |                   |       |
| 52 |    |              | S              | hapiro Wilk     | Test Statistic | 0.561          |                 | Shap            | oiro Wilk Log | normal GOF     | Test              |       |
| 53 |    |              | 5% SI          | hapiro Wilk C   | Critical Value | 0.941          |                 | Data Not        | Lognormal a   | t 5% Significa | ance Level        |       |
| 54 |    |              |                | Lilliefors      | Test Statistic | 0.407          |                 | Lil             | liefors Logno | ormal GOF T    | est               |       |
| 55 |    |              | 5              | % Lilliefors C  | Critical Value | 0.137          |                 | Data Not        | Lognormal a   | t 5% Significa | ance Level        |       |
| 56 |    |              |                |                 | Data Not L     | ognormal at    | 5% Significa    | ance Level      |               |                |                   |       |
| 57 |    |              |                |                 |                |                |                 |                 |               |                |                   |       |
| 58 |    |              |                |                 |                | Lognorma       | I Statistics    |                 |               |                |                   |       |
| 59 |    |              |                | Minimum of I    | Logged Data    | 0.693          |                 |                 |               | Mean of        | logged Data       | 1.782 |
| 60 |    |              | Ν              | Maximum of I    | Logged Data    | 4.868          |                 |                 |               | SD of          | logged Data       | 0.67  |
| 61 |    |              |                |                 |                |                |                 |                 |               |                |                   |       |
| 62 |    |              |                |                 | Assu           | iming Logno    | rmal Distribu   | ution           |               |                |                   |       |
| 63 |    |              |                |                 | 95% H-UCL      | 9.218          |                 |                 | 90%           | Chebyshev (    | MVUE) UCL         | 9.897 |
| 64 |    |              | 95%            | Chebyshev (     | MVUE) UCL      | 11.03          |                 |                 | 97.5%         | Chebyshev (    | MVUE) UCL         | 12.61 |
| 65 |    |              | 99%            | Chebyshev (     | MVUE) UCL      | 15.71          |                 |                 |               |                |                   |       |
| 66 |    |              |                |                 |                |                |                 |                 |               |                | <u>.</u>          |       |
| 67 |    |              |                |                 | Nonparame      | tric Distribu  | tion Free UC    | L Statistics    |               |                |                   |       |
| 68 |    |              |                | I               | Data do not f  | ollow a Disc   | ernible Distri  | ibution (0.05   | 5)            |                |                   |       |
| 69 |    |              |                |                 |                |                |                 |                 |               |                |                   |       |
| 70 |    |              |                |                 | Nonpar         | ametric Dist   | ribution Free   | e UCLs          |               |                |                   |       |
| 71 |    |              |                | 95              | 5% CLT UCL     | 14.45          |                 |                 |               | 95% Ja         | ckknife UCL       | 14.57 |
| 72 |    |              | 95%            | Standard Bo     | ootstrap UCL   | 14.46          |                 |                 |               | 95% Boo        | tstrap-t UCL      | 41.15 |
| 73 |    |              | 9              | )5% Hall's Bo   | ootstrap UCL   | 32.88          |                 |                 | 95% I         | Percentile Bo  | otstrap UCL       | 15.28 |
| 74 |    |              |                | 95% BCA Bo      | ootstrap UCL   | 18.87          |                 |                 |               |                |                   |       |
| 75 |    |              | 90% Ch         | ebyshev(Me      | an, Sd) UCL    | 18.66          |                 |                 | 95% Ch        | ebyshev(Me     | an, Sd) UCL       | 22.89 |
| 76 |    |              | 97.5% Ch       | ebyshev(Me      | an, Sd) UCL    | 28.76          |                 |                 | 99% Ch        | ebyshev(Me     | an, Sd) UCL       | 40.29 |
| 77 |    |              |                |                 |                |                |                 |                 |               |                |                   |       |
| 78 |    |              |                |                 |                | Suggested      | UCL to Use      |                 |               |                |                   |       |
| 79 |    |              | 95% Che        | ebyshev (Me     | an, Sd) UCL    | 22.89          |                 |                 |               |                |                   |       |
| 80 |    |              |                |                 |                |                |                 |                 |               |                |                   |       |
| 81 | 1  | Note: Sugges | stions regard  | ling the selec  | ction of a 95% | UCL are pro    | ovided to hel   | p the user to   | select the m  | nost appropria | ate 95% UCL       |       |
| 82 |    |              | F              | Recommenda      | ations are bas | ed upon dat    | a size, data o  | distribution, a | and skewnes   | S.             |                   |       |
| 83 |    | These recor  | mmendations    | s are based u   | upon the resu  | Its of the sim | ulation studie  | es summariz     | ed in Singh,  | Maichle, and   | d Lee (2006).     |       |
| 84 | Но | wever, simu  | lations result | ts will not cov | /er all Real W | orld data se   | ts; for additio | nal insight th  | ne user may   | want to cons   | ult a statisticia | an.   |
| 85 |    |              |                |                 |                |                |                 |                 |               |                |                   |       |

|    | A         | В             | C            | D                  | E            | F              | G              | Н            |               | J               | K                | L     |
|----|-----------|---------------|--------------|--------------------|--------------|----------------|----------------|--------------|---------------|-----------------|------------------|-------|
| 1  |           |               |              | l                  | UCL Statis   | tics for Unc   | ensored Full   | Data Sets    |               |                 |                  |       |
| 2  |           |               |              | 1                  |              |                |                |              |               |                 |                  |       |
| 3  |           | User Sele     | cted Options | Kyeemagh Infa      | ants Schoo   | ol: Fill mater | al nickel 95%  | 6 UCL        |               |                 |                  |       |
| 4  | Da        | te/Time of Co | omputation   | ProUCL 5.112       | /12/2018 3   | :01:43 PM      |                |              |               |                 |                  |       |
| 5  |           |               | From File    | 627289, 62841      | 16, ES1833   | 3866, ES183    | 34552          |              |               |                 |                  |       |
| 6  |           | Ful           | I Precision  | OFF                |              |                |                |              |               |                 |                  |       |
| 7  |           | Confidence    | Coefficient  | 95%                |              |                |                |              |               |                 |                  |       |
| 8  | Number of | of Bootstrap  | Operations   | 2000               |              |                |                |              |               |                 |                  |       |
| 9  |           |               |              |                    |              |                |                |              |               |                 |                  |       |
| 10 |           |               |              |                    |              |                |                |              |               |                 |                  |       |
| 11 | C0        |               |              |                    |              |                |                |              |               |                 |                  |       |
| 12 |           |               |              |                    |              |                |                |              |               |                 |                  |       |
| 13 |           |               |              |                    |              | General        | Statistics     |              | <u> </u>      |                 |                  |       |
| 14 |           |               | lotal        | Number of Obs      | servations   | 30             |                |              | Numbe         | r of Distinct C | bservations      | 8     |
| 15 |           |               |              |                    |              |                |                |              | Number        | r of Missing C  | bservations      | 0     |
| 16 |           |               |              |                    | Minimum      | 2              |                |              |               |                 | Mean             | 11.29 |
| 17 |           |               |              |                    | iviaximum    | 130            |                |              |               | 0.4 -           |                  | 5     |
| 18 |           |               |              | 0 11               | SD           | 23.13          |                |              |               | Sta. E          | rror of Mean     | 4.222 |
| 19 |           |               |              | Coefficient of     | variation    | 2.049          |                |              |               |                 | Skewness         | 4.997 |
| 20 |           |               |              |                    |              | Normal         | COE Tost       |              |               |                 |                  |       |
| 21 |           |               |              | haniro Wilk Tos    | t Statistic  | 0.331          |                |              | Shaniro Wi    | IK GOE Test     |                  |       |
| 22 |           |               | 5% S         | hapiro Wilk Criti  | ical Value   | 0.001          |                | Data No      | t Normal at   | 5% Significan   |                  |       |
| 23 |           |               | 576 5        |                    | t Statistic  | 0.927          |                | Data No      |               |                 |                  |       |
| 24 |           |               | 5            | % Lilliefors Criti | ical Value   | 0.374          |                | Data No      | t Normal at ! | 5% Significan   | nce l evel       |       |
| 25 |           |               |              |                    | Data Not     | Normal at !    | 5% Significar  |              |               |                 |                  |       |
| 26 |           |               |              |                    | Data Mot     |                | , o olgrinioal |              |               |                 |                  |       |
| 27 |           |               |              |                    | As           | sumina Nor     | mal Distribut  | ion          |               |                 |                  |       |
| 20 |           |               | 95% No       | ormal UCL          |              | g              |                | 95%          | UCLs (Adiu    | sted for Ske    | wness)           |       |
| 29 |           |               |              | 95% Studer         | nt's-t UCL   | 18.46          |                |              | 95% Adjuste   | ed-CLT UCL (    | (Chen-1995)      | 22.35 |
| 30 |           |               |              |                    |              |                |                |              | 95% Modifie   | ed-t UCL (Jol   | ,<br>nnson-1978) | 19.1  |
| 32 |           |               |              |                    |              |                |                |              |               | ,               | ,                |       |
| 33 |           |               |              |                    |              | Gamma          | GOF Test       |              |               |                 |                  |       |
| 34 |           |               |              | A-D Tes            | st Statistic | 5.446          |                | Ander        | son-Darling   | Gamma GO        | F Test           |       |
| 35 |           |               |              | 5% A-D Criti       | ical Value   | 0.774          | Da             | ata Not Gam  | ma Distribut  | ed at 5% Sig    | nificance Lev    | el    |
| 36 |           |               |              | K-S Tes            | st Statistic | 0.421          |                | Kolmog       | orov-Smirno   | ov Gamma G      | OF Test          |       |
| 37 |           |               |              | 5% K-S Criti       | ical Value   | 0.165          | Da             | ata Not Gam  | ma Distribut  | ed at 5% Sig    | nificance Lev    | el    |
| 38 |           |               |              | Data               | Not Gamr     | na Distribut   | ed at 5% Sig   | nificance Le | vel           |                 |                  |       |
| 39 |           |               |              |                    |              |                |                |              |               |                 |                  |       |
| 40 |           |               |              |                    |              | Gamma          | Statistics     |              |               |                 |                  |       |
| 41 |           |               |              | k                  | hat (MLE)    | 1.063          |                |              | k :           | star (bias cor  | rected MLE)      | 0.979 |
| 42 |           |               |              | Theta              | hat (MLE)    | 10.62          |                |              | Theta         | star (bias cor  | rected MLE)      | 11.53 |
| 43 |           |               |              | nu                 | hat (MLE)    | 63.77          |                |              |               | nu star (bia    | is corrected)    | 58.72 |
| 44 |           |               | M            | LE Mean (bias o    | corrected)   | 11.29          |                |              |               | MLE Sd (bia     | s corrected)     | 11.41 |
| 45 |           |               |              |                    |              |                |                |              | Approximate   | e Chi Square    | Value (0.05)     | 42.11 |
| 46 |           |               | Adjus        | sted Level of Sig  | gnificance   | 0.041          |                |              | Ad            | djusted Chi S   | quare Value      | 41.29 |
| 47 |           |               |              |                    |              |                |                |              |               |                 |                  |       |
| 48 |           | -             |              | -                  | Ass          | suming Gan     | nma Distribut  | tion         |               |                 |                  |       |
| 49 | g         | 5% Approxir   | nate Gamma   | UCL (use whe       | n n>=50))    | 15.74          |                | 95% Ad       | justed Gamr   | na UCL (use     | when n<50)       | 16.05 |
| 50 |           |               |              |                    |              |                |                |              |               |                 |                  |       |

|    | А  | В           | С              | D               | E              | F               | G                 | Н               |               | J              | K                | L     |
|----|----|-------------|----------------|-----------------|----------------|-----------------|-------------------|-----------------|---------------|----------------|------------------|-------|
| 51 |    |             |                |                 |                | Lognormal       | GOF Test          |                 |               |                |                  |       |
| 52 |    |             | S              | Shapiro Wilk 7  | Test Statistic | 0.688           |                   | Shap            | oiro Wilk Log | normal GOF     | Test             |       |
| 53 |    |             | 5% S           | hapiro Wilk C   | Critical Value | 0.927           |                   | Data Not        | Lognormal a   | t 5% Significa | ance Level       |       |
| 54 |    |             |                | Lilliefors      | Fest Statistic | 0.401           |                   | Lil             | liefors Logn  | ormal GOF T    | est              |       |
| 55 |    |             | 5              | 5% Lilliefors C | Critical Value | 0.159           |                   | Data Not        | Lognormal a   | t 5% Significa | ance Level       |       |
| 56 |    |             |                |                 | Data Not L     | ognormal at     | 5% Significa      | ance Level      |               |                |                  |       |
| 57 |    |             |                |                 |                |                 |                   |                 |               |                |                  |       |
| 58 |    |             |                |                 |                | Lognorma        | <b>Statistics</b> |                 |               |                |                  |       |
| 59 |    |             |                | Minimum of I    | Logged Data    | 0.693           |                   |                 |               | Mean of        | logged Data      | 1.884 |
| 60 |    |             | 1              | Maximum of l    | Logged Data    | 4.868           |                   |                 |               | SD of          | logged Data      | 0.798 |
| 61 |    |             |                |                 |                |                 |                   |                 |               |                |                  |       |
| 62 |    |             |                |                 | Assu           | uming Logno     | rmal Distribu     | ution           |               |                |                  |       |
| 63 |    |             |                |                 | 95% H-UCL      | 12.62           |                   |                 | 90%           | Chebyshev (    | MVUE) UCL        | 13.24 |
| 64 |    |             | 95%            | Chebyshev (     | MVUE) UCL      | 15.19           |                   |                 | 97.5%         | Chebyshev (    | MVUE) UCL        | 17.89 |
| 65 |    |             | 99%            | Chebyshev (     | MVUE) UCL      | 23.21           |                   |                 |               |                |                  |       |
| 66 |    |             |                |                 |                |                 |                   |                 |               |                |                  |       |
| 67 |    |             |                |                 | Nonparame      | etric Distribut | tion Free UC      | L Statistics    |               |                |                  |       |
| 68 |    |             |                | [               | Data do not f  | ollow a Disc    | ernible Distri    | ibution (0.05   | 5)            |                |                  |       |
| 69 |    |             |                |                 |                |                 |                   |                 |               |                |                  |       |
| 70 |    |             |                |                 | Nonpar         | rametric Dist   | ribution Free     | e UCLs          |               |                |                  |       |
| 71 |    |             |                | 95              | 5% CLT UCL     | 18.23           |                   |                 |               | 95% Ja         | ckknife UCL      | 18.46 |
| 72 |    |             | 95%            | Standard Bo     | ootstrap UCL   | 18.16           |                   |                 |               | 95% Boo        | tstrap-t UCL     | 45.5  |
| 73 |    |             | ç              | 95% Hall's Bo   | ootstrap UCL   | 42.57           |                   |                 | 95% I         | Percentile Bo  | otstrap UCL      | 19.42 |
| 74 |    |             |                | 95% BCA Bo      | ootstrap UCL   | 24.23           |                   |                 |               |                |                  |       |
| 75 |    |             | 90% Cł         | nebyshev(Me     | an, Sd) UCL    | 23.95           |                   |                 | 95% Cł        | ebyshev(Me     | an, Sd) UCL      | 29.69 |
| 76 |    |             | 97.5% Cł       | nebyshev(Me     | an, Sd) UCL    | 37.66           |                   |                 | 99% Cł        | ebyshev(Me     | an, Sd) UCL      | 53.3  |
| 77 |    |             |                |                 |                |                 |                   |                 |               |                |                  |       |
| 78 |    |             |                |                 |                | Suggested       | UCL to Use        |                 |               |                |                  |       |
| 79 |    |             | 95% Ch         | ebyshev (Me     | an, Sd) UCL    | 29.69           |                   |                 |               |                |                  |       |
| 80 |    |             |                |                 |                |                 |                   |                 |               |                |                  |       |
| 81 | I  | Note: Sugge | stions regard  | ding the selec  | tion of a 95%  | UCL are pro     | ovided to help    | p the user to   | select the m  | nost appropria | ate 95% UCL      |       |
| 82 |    |             | F              | Recommenda      | ations are bas | sed upon dat    | a size, data c    | distribution, a | and skewnes   | SS.            |                  |       |
| 83 |    | These reco  | mmendation     | s are based ι   | pon the resu   | Its of the sim  | ulation studie    | es summariz     | zed in Singh, | Maichle, and   | d Lee (2006).    |       |
| 84 | Но | wever, simu | lations result | ts will not cov | er all Real W  | orld data set   | s; for additio    | nal insight th  | ne user may   | want to cons   | ult a statistici | an.   |
|    |    |             |                |                 |                |                 |                   |                 |               |                |                  |       |

## APPENDIX

BOREHOLE LOGS



| (              |  | )  | Cá  | arc  | lno'   |   |  |               |  |                |  |   | В  | ORE  | HOLE LOG SHEET   |
|----------------|--|--|---|--|--|---|--|---------------|--|----------------|--|---|--|--|--|
| CI<br>Pi<br>Lo | ien<br>oje<br>ocat   | t:<br>ct:<br>tion  | ם<br>כ<br>ו   | OWP<br>Detai<br>(yee   | Australia<br>led Site Ir<br>magh Infa  | vestigation an  | d Geot<br>/eemag                                     | tech<br>gh, N | nical Ir<br>ISW  | ives           | tigation<br>Job No: 5017190157   |   |  | Η  | Iole No: BH01<br>Sheet: 1 of 2   |
| P              | osit   | ion:   | E33   | 0215   | .509 N624  | 1986.553 56 N   | IGA94  | -             |  |                | Angle from Horizontal:   | 90°   | 5  | Surface  | e Elevation: 3.480 m AHD   |
| Ri             | g T  | ype  | : Ute   | e Mo   | unted Dri  | ll Rig  |  |               |  |                | Mounting: Light Vehic  | le  | ]  | Driller:   | TR<br>story Strategore   |
|                | asii<br>ata :  | Star   | ted:  | 10/1   | 1/18   | Date Com  | pleted:  | 10/           | 11/18  |                | Logged By: DD  |   | (  | Checke   | ed By: JB  |
|                | Dr   | rilling  |   |  | Sampl  | ing & Testing   |  |               |  |                | Mate   | erial Descriptio  | n  |  |  |
| Method         |  | Resistance   | Casing  | Water  | Si   | ample or<br>ield Test   | RL (m AHD)   | Depth (m)     | Graphic<br>Log   | Classification | SOIL TYPE, plasticity or particle of<br>colour, secondary and minor c<br>ROCK TYPE, grain size and ty<br>fabric & texture, strength, we<br>defects and structure   | characteristic,<br>components<br>/pe, colour,<br>eathering,<br>e  | Moisture<br>Condition  | Consistency<br>Relative<br>Density               | STRUCTURE<br>& Other Observations  |
| AD/T           |  |  |   |  | SPT 1.00 - 7<br>4, 4, 6 N=10   | 1.45 m<br>)   | 3  | - 1           |  |                | 0.10m organics<br>organics<br>FILL: Gravelly SAND: fine gr<br>fine to medium grained grave<br>Sitty SAND: fine grained, gre  | ey, with  | D  |  | TOPSOIL<br>FILL<br>MARINE  |
| -              | ,  |  |   | 11/18  | SPT 2.50 - 2<br>5, 9, 15 N=2   | 2.95 m<br>24  |  | -3            |  | ·              | 2.20m<br>Silty SAND: fine to medium g<br>yellow  | grained, white  | м  |  | -<br>-<br>-<br>-<br>-<br>-<br>-  |
|                | F  | F-H  |   | 10/  | ES 4.00 - 4.<br>BH01 4.00 - 4<br>SPT 4.00 - 2<br>8, 16, 26 N=                                | 45 m<br>4.45 ASS<br>4.45 m<br>42  |  | - 4           |  | SP             | 5.50m  |   |  | MD to D  |  |
| - MB -         | 2  |  |   |  | 5.50 - 5.95<br>BH01 5.50 - 3<br>SPT 5.50 - 5<br>17, 19, 19 N<br>7.00 - 7.45<br>BH01 7.00 - 7 | m<br>5.95 ASS<br>5.95 m<br>I=38<br>7.45 ASS<br>7.45 m   | -3   | - 6           |  | SP             | SAND: fine to medium grain<br>trace fine grained rounded g   | ed, pale grey,<br>ravel   | w  | D  |  |
| 5              |  |  |   |  | (5, 5, 3 N=8   |   |  | - 8           |  | СІ             | Sitty CLAY: medium plasticit<br>fine grained gravel, trace of :<br>8.30m   | y, black, trace<br>shells   |  | F to St  | 7.40 m: HP = 100 Kpa<br>-<br>-<br>-  |
|                |  |  |   |  | 8.50 - 8.95<br>BH01 8.50-8<br>SPT 8.50 - 8<br>0, 0, 0 N=0                                    | m<br>8.95 ASS<br>3.95 m   |  | -9            |  | CL-<br>CI      | Sandy CLAY: low to medium<br>black, fine grained sand, with<br>fragments   | n plasticity,   |  | VS to S  |  |
|                | METH<br>EX<br>R<br>HA<br>PT<br>SON<br>AH<br>PS<br>SON<br>AD/V<br>HFA<br>AD/T<br>HFA<br>R<br>R<br>R<br>efer f<br>R<br>Refer f | HOD<br>Exc<br>Rip<br>Hai<br>Sol<br>Air<br>Per<br>Sol<br>Sol<br>Hol<br>Wa<br>Ro | cavato<br>per<br>nd aug<br>sh tube<br>nic drill<br>hamm<br>rcussic<br>ort spir<br>id fligh<br>id fligh<br>llow flig<br>shbore<br>ck rolle | r bucke<br>er<br>er<br>n sam<br>al auge<br>t auge<br>t auge<br>t auge<br>drillin<br>er<br>notes fo | pler<br>er<br>r: V-Bit<br>r: TC-Bit<br>ger<br>or details of<br>escriptions                   | PENETRATION<br>VE Very Easy (N<br>E Easy<br>F Firm<br>H Hard<br>VH Very Hard (Re<br>WATER<br>WATER<br>Water Lu<br>shown<br>Water inf<br>Water out | p Resistance<br>efusal)<br>evel on D<br>low<br>tflow | ate           | FIE<br>SP<br>HP<br>DC<br>PSI<br>MC<br>PB<br>IMF<br>PIC<br>VS |                | ESTS<br>Standard Penetration Test<br>Hand/Pocket Penetrometer<br>Dynamic Cone Penetrometer<br>Perth Sand Penetrometer<br>Moisture Content<br>Plate Bearing Test<br>Borehole Impression Test<br>Photoionisation Detector<br>Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa)<br>(NSW/ACT) PTY I | SAMPLES<br>B - Bulk,<br>D - Distu<br>ES - Erwir<br>U - Thin v<br>MOISTURE<br>D - Dry<br>M - Moist<br>W - Wet<br>PL - Plast<br>LL - Liqui<br>w - Moist | disturbe<br>rbed sa<br>onment<br>wall tube<br>ti<br>ti<br>ti<br>ti<br>ti<br>ti<br>ti<br>ti<br>ti<br>ti<br>ti<br>ti<br>ti | I<br>d sample<br>al sample<br>e 'undistu<br>tent | SOIL CONSISTENCY         VS       - Very Soft         S       - Soft         F       - Firm         std       - Very Stiff         H       - Hard         RELATIVE DENSITY         VL       - Very Loose         L       - Loose         MD       - Medium Dense         D       - Dense         VD       - Very Dense |

|  |   | )   | Cá   | ara   | no   |   |  |                             |  |                |  |   | В  | ORE   | HOLE LOG SHEE  |
|--|---|---|--|---|--|---|--|-----------------------------|--|----------------|--|---|--|---|--|
|  | Clie<br>Proj<br>Loc                     | nt:<br>ject:<br>ation   | C<br>C<br>: M  | )WP<br>)etail<br>(yeei  | Australia<br>led Site Ir<br>nagh Infa                    | nvestigation an<br>ints School, Ky  | id Geo<br>/eema  | techr<br>gh, N              | nical Ir<br>SW   | ives           | tigation<br>Job No: 5017190157   |   |  | H   | Iole No: BH01<br>Sheet: 2 of   |
| I  | Pos                                     | ition   | E33  | 0215  | .509 N624  | 1986.553 56 N   | /IGA94   |                             |  |                | Angle from Horizontal:   | : 90°   | 5  | Surface   | e Elevation: 3.480 m AHD   |
| H  | Rig                                     | Туре  | : Ute  |   | unted Dri  | ll Rig  |  |                             |  |                | Mounting: Light Vehic  | le  | ]  | Driller:  | TR   |
| H  | Data                                    | a Sta   | rted:  | 10/1  | 1/18   | Date Com  | pleted   | : 10/                       | 11/18  |                | Logged By: DD  |   |  | Checke  | ed Bv: JB  |
| F  |   | Drilling  | 1  |   | Sampl  | ing & Testing   |  |                             |  |                |  | erial Description   | 1  |   | ··   |
|  | Method                                  | Resistance  | Casing   | Water   | Si   | ample or<br>ield Test   | RL (m AHD)   | Depth (m)                   | Graphic<br>Log   | Classification | SOIL TYPE, plasticity or particle of<br>colour, secondary and minor c<br>ROCK TYPE, grain size and ty<br>fabric & texture, strength, we<br>defects and structure   | characteristic,<br>components<br>ype, colour,<br>eathering,<br>e  | Moisture<br>Condition  | Consistency<br>Relative<br>Density                  | STRUCTURE<br>& Other Observations  |
|  |   |   |  |   | 10.00 - 10.2<br>BH01 10.00<br>SPT 10.00 -<br>1, 0, 1 N=1 | 45 m<br>-10.45 ASS<br>10.45 m   | -7   | -<br>-<br>-<br>-<br>- 11    |  | CL-<br>CI      | Clayey CLAY: fine to mediur<br>plasticity clay   | m, black, low   |  | VL  | MARINE   |
|  |   |   |  |   | SPT 11.50 -<br>4, 5, 7 N=12                              | 11.95 m   | -8-  | -<br>- 12<br>-              |  | SP             | 11.50m SAND: medium grained, yell  | low grey  |  |   |  |
|  | WB                                      | F-H   |  |   | SPT 13.00 -<br>4, 7, 14 N=2                              | 13.45 m<br>1  | -10-   | - 13                        |  | SP             | 13.00m<br>Clayey SAND: fine grained, y<br>plasticity clay  | grey, low   | w  |   |  |
|  |   |   |  |   | SPT 14.50 -<br>26, 30 N=R                                | 14.80 m   | -11 -<br>-11 -<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>- | - 14<br>-<br>-<br>- 15<br>- |  | SP             | 14.60m<br>SAND: fine to medium grain<br>yellow   | ed, grey  |  | D to VD   | WEATHERED ROCK   |
| 0.00.104                                 |   |   |  |   | SPT 16.00 -<br>0, 8, 30 N=3                              | 16.45 m<br>8  |  | - 16                        |  |                | 16.45m   |   |  |   |  |
| 0011 01 07 101 101 001 101 101 101 101 1 |   |   |  |   |  |   | -13  | -<br>- 17<br>-<br>-         |  |                | TERMINATED AT 16.45 m<br>Target depth  |   |  |   |  |
|  |   |   |  |   |  |   | -15-   | - 18<br>- 19                |  |                |  |   |  |   |  |
|  |   |   |  |   |  |   | -16  |                             |  |                |  |   |  |   |  |
|  | ME EX R HA PT SO AH PS AD AD HF R R R R | THOD<br>EX:<br>Haa<br>Pu<br>N So<br>Air<br>Pe<br>Sho<br>/T So<br>A Ho<br>3 Wa<br>Ro<br>er to expe | cavator<br>pper<br>nd aug<br>sh tube<br>nic drilli<br>hamm<br>rcussio<br>ort spir,<br>lid fligh<br>lid fligh<br>lid fligh<br>lid fligh<br>lid fligh<br>lid fligh<br>lid fligh<br>lid fligh | bucke<br>er<br>ng<br>er<br>n sam<br>al auger<br>auger<br>t auger<br>ht auger<br>ht auger<br>r | pler<br>er<br>: V-Bit<br>: TC-Bit<br>er<br>g             | PENETRATION<br>VE Very Easy (N<br>E Easy<br>F Fim<br>H Hard<br>VH Very Hard (R<br>WATER<br>WATER<br>Water L<br>shown<br>water out | o Resistan<br>efusal)<br>evel on E<br>low<br>ttflow                                  | Date                        | FIE<br>SP<br>HP<br>DC<br>PSI<br>MC<br>PB<br>IMF<br>PID<br>VS |                | STS<br>Standard Penetration Test<br>Hand/Pocket Penetrometer<br>Dynamic Cone Penetrometer<br>Perth Sand Penetrometer<br>Moisture Content<br>Plate Bearing Test<br>Borehole Impression Test<br>Photoionisation Detector<br>Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa) | SAMPLES<br>B - Bulk<br>D - Distu<br>ES - Envir<br>U - Thin<br>MOISTURE<br>D - Dry<br>M - Moist<br>W - Wet<br>PL - Plast<br>LL - Liquic<br>w - Moist | disturbe<br>rbed sar<br>onmenta<br>wall tube<br>ic limit<br>d limit<br>ure con | d sample<br>mple<br>al sample<br>e 'undistu<br>tent | e SOIL CONSISTENCY<br>VS - Very Soft<br>S - Soft<br>F - Firm<br>VSt - Stiff<br>VSt - Very Stiff<br>H - Hard<br>RELATIVE DENSITY<br>VL - Very Loose<br>L - Loose<br>MD - Medium Dense<br>D - Dense<br>VD - Very Dense |

| _                   |                      | $\bigcirc$             | Cá  | arc                                 | <b>Ino</b> °                           |  |              |               |                |               |   |  | B                         | ORE                                | HOL             | E LOC                      | <b>SHEET</b>                        |
|---------------------|----------------------|------------------------|---|-------------------------------------|--|--|--------------|---------------|----------------|---------------|---|--|---------------------------|------------------------------------|-----------------|----------------------------|-------------------------------------|
|                     | Clie<br>Proj<br>Loc  | nt:<br>ject:<br>ation  | C<br>C<br>: P                                 | )WP<br>)etai<br>(yee                | Australia<br>led Site Ir<br>magh Infa  | າvestigation an<br>ants School, Kງ               | d Geot       | echi<br>Ih, N | nical Ir<br>SW | ives          | tigation<br>Job No: 5017190157  |  |                           | Η                                  | lole            | No:                        | BH02                                |
| I                   | Pos                  | ition                  | E33   | 0177                                | .733 N624                              | 42026.438 56 N                                   | IGA94        |               |                |               | Angle from Horizontal:  | 90°  | S                         | urface                             | e Elevat        | ion: 4.6                   | 00 m AHD                            |
|                     | Rig                  | Туре                   | : Ute   | Mo                                  | unted Dri                              | ll Rig   |              |               |                |               | Mounting: Light Vehicle   | )  | D                         | riller:                            | TR              |                            |                                     |
| H                   | Cas<br>Data          | ing E<br>a Sta         | iame  | eter:                               | 1/18                                   | Date Com   | nlotod:      | 17/           | 11/18          |               |   |  | <u> </u>                  | ontra                              | ctor: St        | tratacore                  | •                                   |
| F                   | Jau                  | Drilling               |   | 1771                                | Sampl                                  | ling & Testing                                   | lieleu.      | 111           |                |               | Materi  | ial Description  |                           | HECKE                              | 50 Dy. 0        |                            |                                     |
|                     |                      |                        | ,   |                                     | Camp                                   |  | <u>ê</u>     | (L            |                | ç             |   |  |                           |                                    |                 |                            |                                     |
|                     | Method               | Resistance             | Casing  | Water                               | S                                      | ample or<br>ield Test                            | RL (m Ał     | Depth (r      | Graphic<br>Log | Classificatio | SOIL TYPE, plasticity or particle ch.<br>colour, secondary and minor con<br>ROCK TYPE, grain size and type<br>fabric & texture, strength, weat<br>defects and structure | aracteristic,<br>nponents<br>e, colour, <u>t</u><br>thering, | Condition                 | Consistency<br>Relative<br>Density | ٤               | STRUCT<br>& Other Obs      | URE<br>ervations                    |
|                     |                      |                        |   |                                     |  |  | 4            |               |                |               | 0.10m Silty SAND: fine to medium gra<br>brown, with organics<br>FILL: Gravelly SAND: fine grain<br>brown, fine to medium grained<br>turning orange brown in colour      | ained, black /<br><br>ned, grey<br>  gravel<br>-             | ₫ _                       |                                    | TOPSOIL<br>FILL | <u> </u>                   |                                     |
|                     |                      |                        |   |                                     | SPT 1.00 - <sup>-</sup><br>3, 4, 5 N=9 | 1.45 m   | ļĮ           | • 1           | ĨĨ             |               | Silty SAND: fine grained, pale  | brown  | Ī                         |                                    | MARINE          |                            |                                     |
|                     | — AD/T —             |                        |   |                                     | D 1.50 - 2.0                           |  | 3-           |               |                | •             |   |  |                           |                                    |                 |                            | -                                   |
|                     |                      |                        |   |                                     |  |  | +            | 2             |                |               |   | D  | to M                      |                                    |                 |                            | -                                   |
|                     |                      |                        |   |                                     | SPT 2.50 - 2<br>2, 3, 2 N=5            | 2.95 m   | 2-           |               |                | SP            |   |  |                           | L to MD                            |                 |                            | -                                   |
| -                   | X                    |                        |   |                                     |  |  | +            | 3             |                |               |   |  |                           |                                    |                 |                            | -                                   |
|                     |                      |                        |   |                                     |  |  | 1-           |               |                |               |   |  |                           |                                    |                 |                            | -                                   |
|                     |                      |                        |   |                                     | SPT 4.00 - 4                           | 4.45 m   | +            | 4             |                |               | 4 15m   |  |                           |                                    |                 |                            | -                                   |
| 200                 |                      |                        |   | 118                                 | 2, 4, 8 N=12                           | 2  | +            |               |                |               | SAND: fine to medium grained  | I, yellow  |                           |                                    |                 |                            | -                                   |
| Billo               |                      |                        |   | 07/11                               |  |  | 0            |               |                |               | white   |  |                           |                                    |                 |                            | -                                   |
| A, FIRIOU, INICIIIE |                      | E                      |   |                                     |  |  | +            | 5             |                |               |   |  |                           |                                    |                 |                            | -                                   |
| nalyer room         |                      |                        |   |                                     | SPT 5.50 - 5<br>10, 18, 30 N           | 5.95 m<br>√=48                                   | -1           | 6             |                |               | trace of shell fragments  |  |                           |                                    |                 |                            | -                                   |
| +00.0               |                      |                        |   |                                     |  |  |              | 0             |                |               |   |  |                           |                                    |                 |                            | -                                   |
| 0.0                 | NB<br>NB             |                        |   |                                     |  |  |              |               |                | SP            |   |  |                           | D                                  |                 |                            | -                                   |
| 20.0                |                      |                        |   |                                     |  |  | -2-          |               |                |               |   |  |                           |                                    |                 |                            | -                                   |
|                     |                      |                        |   |                                     | SPT 7.00 - 7<br>21, 4, 4 N=8           | 7.45 m<br>3                                      |              | 7             |                |               | potential ass odour   |  | w                         |                                    |                 |                            | -                                   |
|                     |                      |                        |   |                                     |  |  | -3           | 8             |                |               |   |  |                           |                                    |                 |                            | -<br>-                              |
|                     |                      |                        |   |                                     |  |  |              |               |                |               |   |  |                           |                                    |                 |                            | -                                   |
|                     |                      |                        |   |                                     | SPT 8.50 - 8<br>0, 0, 0 N=0            | 3.95 m   | -4           | .0            |                |               | 8.50m<br>Sandy CLAY: low plasticity, bla<br>fine grained sand   |  | -                         |                                    |                 |                            | -                                   |
|                     |                      |                        |   |                                     |  |  | -5           | 5             |                | CL            |   |  |                           | VS to S                            |                 |                            | -                                   |
| 2                   |                      |                        |   |                                     |  |  |              |               |                |               |   |  |                           |                                    |                 |                            | -                                   |
|                     | ME                   | THOD                   |   | - <b>-</b>                          |  | PENETRATION                                      | · · · · · ·  |               | FIE            |               | ESTS  | SAMPLES  |                           |                                    | <u> </u>        | SOIL CO                    |                                     |
|                     | EX<br>R              | Ex<br>Rip              | cavato<br>oper                                | bucke                               | et                                     | VE Very Easy (No<br>E Easy                       | o Resistanc  | e)            | SP1<br>HP      | - 1           | Standard Penetration Test<br>Hand/Pocket Penetrometer   | B - Bulk dis<br>D - Disturb                                  | sturbed<br>ed san         | i sample                           |                 | VS -<br>S -<br>F           | Very Soft<br>Soft<br>Firm           |
|                     | PT<br>SO             | ⊢a<br>Pu<br>N S∩       | sh tube<br>nic drill                          | ei<br>e<br>ina                      |  | F Firm<br>H Hard<br>VH Verv Hard (R              | efusal)      |               | DCI<br>PSF     | P -<br>> _    | Dynamic Cone Penetrometer<br>Perth Sand Penetrometer  | U - Thin wa  | all tube                  | 'undistu                           | rbed'           | St -<br>VSt -              | Stiff<br>Very Stiff                 |
| ر<br>۲              | AH<br>PS             | Air                    | hamm<br>rcussic                               | er<br>n sam                         | pler                                   | WATER  | .,           |               | MC<br>PB1      | -<br>Г-       | Moisture Content<br>Plate Bearing Test  |  |                           |                                    |                 |                            | Hard                                |
|                     | AS<br>AD             | Sh<br>/V So            | ort spir<br>lid fligh                         | al auge<br>t auge                   | er<br>r: V-Bit<br>r: TC Bit            | Water Le<br>shown                                | evel on D    | ate           | IMP            |               | Borehole Impression Test<br>Photoionisation Detector  | M - Moist<br>W - Wet   |                           |                                    |                 | VL -                       | Very Loose                          |
| 0.2.0 I.4 LID       | AD<br>HF<br>WE<br>RR | A Ho<br>Wa<br>Ro       | iia fiigh<br>llow flig<br>ashbore<br>ck rolle | t auge<br>iht aug<br>e drillin<br>r | r: TC-Bit<br>jer<br>g                  | <ul> <li>water inf</li> <li>water out</li> </ul> | low<br>tflow |               | VS             | -             | Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa)  | PL - Plastic<br>LL - Liquid I<br>w - Moistur                 | limit<br>imit<br>re conte | ent                                |                 | L -<br>MD -<br>D -<br>VD - | Medium Dense<br>Dense<br>Very Dense |
|                     | Ref<br>abb           | er to exp<br>reviation | lanatory<br>s and ba                          | notes fo                            | or details of<br>escriptions           |  | C            | AF            |                | 0 (           | NSW/ACT) PTY L  | TD   |                           |                                    |                 |                            |                                     |

|      |  | $\mathbf{D}$   | Cá  | arc  | <b>ino</b> °  |  |                                |                |  |               |   |  | B   | ORE                                       | HOLE LOG SHEET  |
|------|--|--|---|--|---|--|--------------------------------|----------------|--|---------------|---|--|---|---|---|
|      | Clie<br>Proj<br>Loc  | nt:<br>ject:<br>ation  | C<br>C<br>: M   | )WP<br>)etai<br>(yeei  | Australia<br>led Site Ir<br>magh Infa                     | vestigation an<br>Ints School, Ky  | d Geot<br>eemag                | techi<br>jh, N | nical Ir<br>ISW  | ives          | tigation<br>Job No: 5017190157  |  |   | Η   | Iole No: BH02<br>Sheet: 2 of 2  |
| L    | Pos  | ition  | : E33   | 0177   | .733 N624   | 2026.438 56 N  | IGA94                          |                |  |               | Angle from Horizontal:  | : 90°  | S   | Surface                                   | Elevation: 4.600 m AHD  |
| L    | Rig  | Туре   | : Ute   | Mo   | unted Dril  | ll Rig   |                                |                |  |               | Mounting: Light Vehic   | le   | D   | oriller:                                  | TR  |
| H    | Cas<br>Date  | ing E<br>a Sta   | Diame   | eter:  | 1/18  | Data Com   | alotod                         | 17/            | 11/18  |               | Logged By: DD   |  | <u>с</u>  | ontra                                     | ctor: Stratacore  |
| H    | Date   | Drilling   |   | 1771   | Sampl   | ing & Testing  | Jieleu.                        | 111            |  |               | Mat   | terial Description   |   | HECKE                                     | a by. 5b  |
| ŀ    |  |  | ,   |  | - Cumpi   | ing a roomig   | <u> </u>                       | Ē              |  | Ę             |   |  |   |   |   |
|      | Method   | Resistance   | Casing  | Water  | Sa<br>Fi  | ample or<br>ield Test  | RL (m AF                       | Depth (r       | Graphic<br>Log   | Classificatio | SOIL TYPE, plasticity or particle<br>colour, secondary and minor or<br>ROCK TYPE, grain size and ty<br>fabric & texture, strength, we<br>defects and structur   | characteristic,<br>components<br>ype, colour,<br>eathering,<br>re  | Moisture<br>Condition   | Consistency<br>Relative<br>Density        | STRUCTURE<br>& Other Observations   |
|      |  |  |   |  | SPT 10.00 -<br>0, 0, 0 N=0                                | 10.45 m  | -                              |                |  |               | Sandy CLAY: low plasticity, fine grained sand (continued  | black brown,<br>d)   |   |   | MARINE  |
|      |  |  |   |  | SPT 11.50 -   | 11.95 m  | -6 -+<br>+<br>+<br>+<br>-7 -+  | - 11           |  | CL            |   |  |   | VS to S                                   | -   |
|      |  |  |   |  | 20, 2, 4 N=6  | 5  | -8-                            | - 12           |  |               | 13.00m  |  |   |   | -   |
| 2001 |  | E  |   |  | SPT 13.00 -<br>2, 5, 8 N=13                               | 13.45 m  | -9-+                           | - 13           |  | CL-<br>CI     | Sandy CLAY: low to medium grey, fine grained sand   | n plasticity,  | w   |   |   |
|      |  |  |   |  | SPT 14.50 -<br>24, 30/30mr                                | 14.68 m<br>n N=R   | -10                            | - 15           |  | SP            | SAND: medium grained, gre   | эу — — — — — — — — — — — — — — — — — — —   |   | D to VD                                   | -   |
|      |  |  |   |  | SPT 16.00 -<br>7, 5, 5 N=10                               | 16.45 m  | -12-+<br>+<br>+<br>+<br>+<br>+ | - 16<br>- 17   |  | CI-<br>CH     | Sandy CLAY: medium to hig fine grained sand   | ah plasticity,   | -   | н   |   |
| R    | V  |  |   |  | 16, 19, 17 N  | I=36   | -13                            | -18            |  | SP            | 17.95m<br>TERMINATED AT 17.95 m   | im grained,  |   | D to VD                                   |   |
|      |  |  |   |  |   |  | +<br>-14<br>+                  | - 19           |  |               | Target depth  |  |   |   | -   |
|      |  |  |   |  |   |  | +<br>-15-+                     |                |  |               |   |  |   |   | -   |
|      | ME<br>EX<br>R<br>HA<br>PT<br>SO<br>AH<br>PS<br>AD<br>AD<br>HF<br>R<br>R<br>R | THOD<br>Ex<br>Rip<br>Ha<br>Pu<br>N Soir<br>Pe<br>Sh<br>/V Soi<br>/T Soi<br>A Ho<br>3 Wa<br>2 Roi<br>er to experience | cavator<br>oper<br>nd aug<br>sh tube<br>nic drilli<br>hamme<br>rcussio<br>ort spin<br>lid flight<br>ild flight<br>ild flight<br>ild flight<br>low flig<br>ashbore<br>ck rolle | bucke<br>er<br>ing<br>er<br>n sam<br>al auge<br>t auger<br>t auger<br>t auger<br>t auger<br>t auger<br>t auger<br>t auger<br>nht aug | pler<br>er<br>r: V-Bit<br>r: TC-Bit<br>g<br>or details of | PENETRATION<br>VE Very Easy (No<br>E Easy<br>F Firm<br>H Hard<br>VH Very Hard (Re<br>WATER<br>WATER<br>Water Le<br>shown<br>water infl<br>water ou | evel on D<br>ow<br>tflow       | ate            | FIE<br>SP<br>HP<br>DC<br>PSF<br>MC<br>PB<br>IMP<br>PID<br>VS |               | Standard Penetration Test<br>Hand/Pocket Penetrometer<br>Dynamic Cone Penetrometer<br>Perth Sand Penetrometer<br>Moisture Content<br>Plate Bearing Test<br>Borehole Impression Test<br>Photoionisation Detector<br>Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa) | SAMPLES<br>B - Bulk di<br>D - Disturt<br>ES - Enviro<br>U - Thin w<br>MOISTURE<br>D - Dry<br>M - Moist<br>W - Wet<br>PL - Plastic<br>LL - Liquid<br>w - Moistu | isturbed<br>bed sam<br>nmental<br>all tube<br>: limit<br>limit<br>ire conte | d sample<br>nple<br>I sample<br>'undistur | SOIL CONSISTENCY         VS       Very Soft         S       Soft         F       Firm         rbed'       St       Stiff         VSt       Very Stiff         H       Hard         RELATIVE DENSITY         VL       Very Loose         L       Loose         MD       Medium Dense         D       Dense         VD       Very Dense |

|  | _   |   | Ca   | arc   | no  |  |   |                    |  |  |   | B  | ORE   | HOLE LOG SHEET   |
|--|---|---|--|---|---|--|---|--------------------|--|--|---|--|---|--|
| C<br>P                                 | lie<br>roj  | nt:<br>ect:   | [<br>[<br>   | OWP<br>Detai  | Australia<br>led Site Ir                        | vestigation an   | d Geo   | tech               | nical Ir   | nves   | tigation  |  | ŀ   | lole No: BH03  |
| P                                      | osi   | ition   | : E33  | 0229  | .353 N624                                       | 1972.538 56 N  | IGA94   | yn, n              | 511  |  | Angle from Horizontal: 90°  |  | Surfac  | e Elevation: 3.830 m AHD   |
| R                                      | ig  | Туре  | : Uto  | e Mo  | unted Dri                                       | II Rig   |   |                    |  |  | Mounting: Light Vehicle   |  | Driller:  | TR   |
| С                                      | asi   | ing I   | Diame  | eter:   |   |  |   |                    |  |  |   |  | Contra  | ctor: Stratacore   |
| D                                      | ata   | sta   | rted:  | 17/1  | 1/18  | Date Com   | oleted  | : 17/              | 11/18  |  | Logged By: DD   |  | Check   | ed By: JB  |
|  | 0   | Drillin   | g  |   | Sampl   | ing & Testing  | ~   |                    |  |  | Material Desc   | ription  |   | T  |
| Mathad                                 |   | Resistance  | Casing   | Water   | S   | ample or<br>ield Test  | RL (m AHD   | Depth (m)          | Graphic<br>Log   | Classification   | SOIL TYPE, plasticity or particle characteris<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour<br>fabric & texture, strength, weathering,<br>defects and structure   | tic,<br>Condition  | Consistency<br>Relative<br>Density              | STRUCTURE<br>& Other Observations  |
|  | •   |   |  |   | D 0.20 - 0.5                                    | 0 m  |   |                    |  | ·  | SAND: fine to medium grained, dark<br>brown, with organics     SAND: fine to medium grained, pale<br>brown  |  |   | TOPSOIL<br>MARINE  |
|  |   |   |  |   | SPT 1.00 - <sup>-</sup><br>1, 3, 3 N=6          | 1.45 m   | 3   | -<br>- 1<br>-      |  |  | 1.50m   |  |   | -  |
|  |   |   |  |   | B 2.00 - 2.5                                    | 0 m  | -<br>2<br>-   | -<br>              |  |  | SAND: fine to medium grained, yellow brown  | D to M   |   | -<br>-<br>-<br>-   |
|  | L   |   |  |   | SPT 2.50 - 2<br>2, 7, 10 N=1                    | 2.95 m<br>7  | ء<br>بر<br>1_1                                      | -<br>-<br>- 3      |  | SP   |   |  | MD  |  |
| 2                                      |   |   |  | 1/181   | SPT 4.00 - 4<br>6. 20. 22 N=                    | 4.45 m<br>-42  | -<br>-<br>-<br>0-<br>-<br>-                         | -<br>-<br>-<br>- 4 |  |  | 4.00m<br>SAND: fine to medium grained, white<br>vellow  |  |   | -  |
|  |   | E-F   |  | 1/20  |   |  | ז<br>-<br>1-1-<br>ז-                                | -<br>-<br>- 5      |  |  |   |  |   |  |
|  |   |   |  |   | SPT 5.50 - {<br>3, 12, 27 N=                    | 5.95 m<br>-39  | -2  | - 6                |  | SP   | medium grained sand   |  | MD to D   |  |
|  |   |   |  |   | SPT 7.00 - 7<br>7, 7, 6 N=13                    | 7.45 m   | -3  | - 7<br>- 7         |  |  | turning grey in colour  | w  |   |  |
|  |   |   |  |   | SPT 8.50 - 8<br>0, 0, 1 N=1                     | 3.95 m   | -4  | - 8<br>-<br>-      |  |  | 8.20m<br>Sandy CLAY: low plasticity, grey, fine to<br>medium grained sand   |  |   |  |
|  |   |   |  |   |   |  | -5  | - 9<br>-<br>-      |  | CL   |   |  | VS  |  |
| ייטויד בוניסבת בעק מיויניוע וועוי בכיי | ME<br>EX<br>R<br>HA<br>PT<br>SOI<br>AD/<br>AD/<br>HF/<br>WB<br>RP | THOD<br>Ri<br>Ha<br>Pr<br>N<br>Si<br>Si<br>V<br>Si<br>V<br>Si<br>V<br>Si<br>V<br>Si<br>V<br>Si<br>V<br>Si | ccavato<br>pper<br>and aug<br>ush tube<br>onic drill<br>r hamm<br>ercussic<br>oort spir<br>blid fligh<br>blid fligh<br>blid fligh<br>blow flig<br>ashbor | r bucke<br>er<br>er<br>ing<br>er<br>in sam<br>al auge<br>t auge<br>t auge<br>ght auge<br>ght auge | pler<br>er<br>r: V-Bit<br>r: TC-Bit<br>ger<br>g | PENETRATION<br>VE Very Easy (Ne<br>E Easy<br>F Firm<br>H Hard<br>VH Very Hard (Re<br>WATER<br>WATER<br>Shown<br>Water Inf<br>water out | D Resistand<br>ofusal)<br>evel on E<br>low<br>tflow | ce)<br>Date        | FIE<br>SP<br>HP<br>DC<br>PSI<br>MC<br>PB<br>IMF<br>PID<br>VS | ELD TE<br>ELD TE<br>P -<br>P -<br>T -<br>T -<br>D -<br>- | L     SAMPL       STS     SAMPL       Standard Penetration Test     B       Hand/Pocket Penetrometer     D       Dynamic Cone Penetrometer     U       Perth Sand Penetrometer     U       Noisture Content     MOIST       Plate Bearing Test     D       Borehole Impression Test     M       Photoionisation Detector     W       Vane Shear; P=Peak,     LL       R=Resdual (uncorrected kPa)     W | LES<br>Bulk disturbe<br>Disturbed sa<br>Environmen<br>Thin wall tub<br>URE<br>Dry<br>Moist<br>Wet<br>Plastic limit<br>Liquid limit<br>Moisture con | ed sample<br>ample<br>tal sample<br>ve 'undistu | SOIL CONSISTENCY<br>VS - Very Soft<br>S - Soft<br>F - Firm<br>VSt - Stiff<br>VSt - Very Sliff<br>H - Hard<br>RELATIVE DENSITY<br>VL - Very Loose<br>L - Loose<br>MD - Medium Dense<br>D - Dense<br>VD - Very Sorge |
|  | Refe  | er to experiation   | planatory  | notes fo  | or details of<br>escriptions                    |  | (   | CAF                |  | 0 (  | NSW/ACT) PTY LTD  |  |   |  |

| 5               |  |  | Ca   | ra  | Ino                                       |   |                       |                |   |  |  |   | В  | ORE   | HOLE       | LOG  | SHEET  |
|-----------------|--|--|--|---|---|---|-----------------------|----------------|---|--|--|---|--|---|------------|--|--|
| Cli<br>Pr<br>Lo | ient:<br>ojeci<br>catio  | t:<br>on:  | D<br>D<br>K  | WP<br>etai<br>yeei                                    | Australia<br>led Site Inv<br>magh Infan   | restigation an<br>ts School, Ky   | d Geo<br>veemag       | techi<br>gh, N | nical II<br>SW  | ives   | tigation<br>Job No: 5017190157   |   |  | H   | lole N     | <b>lo:</b><br>sr   | BH03   |
| Po              | sitic  | on: E  | 330  | -<br>)229   | .353 N6241                                | 972.538 56 N  | IGA94                 |                |   |  | Angle from Horizontal  | : 90°   | 5  | Surface                                     | e Elevatio | n: 3.83  | 0 m AHD  |
| Ri              | g Ty   | pe:  | Ute  | Мо  | unted Drill                               | Rig   |                       |                |   |  | Mounting: Light Vehic  | cle   | [  | Driller:                                    | TR         |  |  |
| Ca              | sing   | J Dia  | me   | ter:  |   |   |                       |                |   |  |  |   | (  | Contra                                      | ctor: Stra | tacore   |  |
| Da              | ta S   | tarte  | ed: '  | 17/1 <sup>-</sup>                                     | 1/18                                      | Date Com  | oleted:               | : 17/          | 11/18   |  | Logged By: DD  |   |  | Checke                                      | ed By: JB  |  |  |
|                 | Drill  | ing  |  |   | Samplin                                   | g & Testing   | â                     | _              |   |  | Mat  | terial Descriptio   | n  |   |            |  |  |
| Method          | Resistance   |  | Casing   | Water   | Sar<br>Fiel                               | nple or<br>ld Test  | RL (m AHC             | Depth (m)      | Graphic<br>Log  | Classification   | SOIL TYPE, plasticity or particle<br>colour, secondary and minor or<br>ROCK TYPE, grain size and ty<br>fabric & texture, strength, we<br>defects and structure   | characteristic,<br>components<br>type, colour,<br>eathering,<br>re  | Moisture<br>Condition                                  | Consistency<br>Relative<br>Density          | & O        | STRUCT<br>ther Obse  | URE<br>ervations   |
|                 |  |  |  |   | SPT 10.00 - 1<br>0, 1, 0 N=1              | 0.45 m  |                       |                |   |  | Sandy CLAY: low plasticity,<br>medium grained sand (conti  | grey, fine to<br>inued)   |  |   | MARINE     |  |  |
|                 |  |  |  |   |   |   | -<br>-7<br>-7         | - 11           |   | CL   |  |   |  | VS  |            |  | -  |
|                 |  |  |  |   |   |   | ł                     |                |   | 1  | SAND: fine to medium grain   | ned, brown  |  |   |            |  |  |
| WB              | E-   | F  |  |   | SPT 11.50 - 1<br>12, 20, 18 N=:           | 1.95 m<br>38  | -8-1                  | - 12           |   |  |  |   | w  |   |            |  | -  |
|                 |  |  |  |   |   |   | -<br>-<br>-9          | 12             |   | SP   |  |   |  | MD to D                                     |            |  |  |
|                 |  |  |  |   | SPT 13.00 - 1<br>12, 5, 8 N=13            | 3.45 m  | -                     | 10             |   |  | 13.45m   |   |  |   |            |  |  |
|                 |  |  |  |   |   |   | <br>-10               |                |   |  | TERMINATED AT 13.45 m<br>Target depth  |   |  |   |            |  |  |
|                 |  |  |  |   |   |   | -                     | - 14           |   |  |  |   |  |   |            |  | -  |
|                 |  |  |  |   |   |   | -<br>                 | - 15           |   |  |  |   |  |   |            |  |  |
|                 |  |  |  |   |   |   | <br><br>              | - 16           |   |  |  |   |  |   |            |  | -  |
|                 |  |  |  |   |   |   | ء<br>-<br>-<br>-      |                |   |  |  |   |  |   |            |  |  |
|                 |  |  |  |   |   |   | -13                   | - 17           |   |  |  |   |  |   |            |  | -  |
|                 |  |  |  |   |   |   | -14-1-<br>-14-1-<br>- | - 18           |   |  |  |   |  |   |            |  | -  |
|                 |  |  |  |   |   |   | <br><br>-15           |                |   |  |  |   |  |   |            |  |  |
|                 |  |  |  |   |   |   |                       | - 19           |   |  |  |   |  |   |            |  | -  |
|                 |  |  |  |   |   |   | -16                   |                |   |  |  |   |  |   |            |  |  |
|                 | IETHC<br>X<br>IA<br>T<br>SON<br>H<br>S<br>S<br>D/V<br>D/T<br>IFA | DD<br>Excav<br>Rippe<br>Hand<br>Push<br>Sonic<br>Air ha<br>Percu<br>Short<br>Solid<br>Hollov | vator<br>r<br>auge<br>tube<br>drillin<br>mme<br>ssior<br>spira<br>flight<br>flight<br>v flight | bucke<br>er<br>ng<br>n sam<br>il auge<br>auge<br>auge | pler<br>er<br>r: V-Bit<br>r: TC-Bit<br>er | PENETRATION<br>VE Very Easy (No<br>E Easy<br>F Firm<br>H Hard<br>VH Very Hard (Re<br>WATER<br>Water Le<br>shown<br>water infi | efusal)<br>evel on D  | ce)<br>Pate    | FIE<br>SP<br>HP<br>DC<br>PS<br>MC<br>PB<br>IMF<br>PIE<br>VS | LD TE<br>T -<br>P -<br>P -<br>T -<br>T -<br>P -<br>-<br>T -<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>- | ESTS<br>Standard Penetration Test<br>Hand/Pocket Penetrometer<br>Dynamic Cone Penetrometer<br>Perth Sand Penetrometer<br>Moisture Content<br>Plate Bearing Test<br>Borehole Impression Test<br>Photoionisation Detector<br>Vane Shear: P=Peak. | SAMPLES<br>B - Bulk<br>D - Distu<br>ES - Envi<br>U - Thin<br>MOISTURE<br>D - Dry<br>M - Mois<br>W - Wet<br>PL - Plast | disturbe<br>irbed sa<br>ronment<br>wall tube<br>t<br>t | d sample<br>mple<br>al sample<br>e 'undistu | rbed'      | SOIL CON           /S         -           S         -           S         -           St         -           /St         -           /St         -           /St         -           /St         -           /L         -           /L         -           /UD         - | VISISTENCY<br>Very Soft<br>Soft<br>Firm<br>Stiff<br>Very Stiff<br>4ard<br>E DENSITY<br>Very Loose<br>.oose<br>Wedjum Dense |
| R<br>R<br>R     | VB<br>RR<br>lefer to<br>bbrevia                                  | Wash<br>Rock<br>explana  | bore<br>roller<br>atory r  | drillin<br>notes fo                                   | g<br>or details of<br>escriptions         | water ou  | tflow                 | CAF            |   | 0 (  | R=Resdual (uncorrected kPa)  | LL - Liqui<br>w - Mois  | d limit<br>ture con                                    | tent  |            | ) - [<br>/D - \  | Dense<br>/ery Dense  |

2.01.4 LIB.GLB Log CARDNO NON-CORED KYEEMAGH BOREHOLE LOGS.GPJ <-DrawingFile>> 18/12/2018 14:36 8:30.004 Datgei AGS RTA, Photo, Mor

|   | $\mathcal{D}$  | Cercho     BOREHOLE LOG SHEET       MVP Australe Site Investigation and Gootochnical Investigation<br>Myeemagh Infants School, Kysemagh, NSW     Job No: 5017190157     Sheet: 1 of 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1<br>Sheet: 1 |  |   |   |  |             |  |  |   |  |   |   |                  |  |   |
|---|--|--|--|---|---|--|-------------|--|--|---|--|---|---|------------------|--|---|
|   | ent:   | [  | )WP  | Australia   | estigation ar   | nd Geo   | toch        | nical Ir   | NOS  | tigation  |  |   | F   | lole N           | No:  | <b>BH04</b>   |
| Lo  | catio  | n: k   | (yee   | magh Infan  | ts School, Ky   | veema  | gh, N       | SW   | 1463   | Job No: 5017190157  |  |   |   |                  | Sh   | eet: 1 of 1   |
| Ро  | sitior   | : E33  | 0149   | .299 N6241  | 929.836 56 M  | NGA94  |             |  |  | Angle from Horizontal:  | 90°  | 5   | Surfac                                      | e Elevatio       | n: 4.38  | 0 m AHD   |
| Rig   | ј Тур  | e: Uto   | e Mo   | unted Drill   | Rig   |  |             |  |  | Mounting: Light Vehic   | le   | 1   | Driller:                                    | TR               |  |   |
| Ca  | sing   | Diame  |  | 1/10  | Data Com  | plated   | 10/         | 44/40  |  |   |  | (   | Contra                                      | ctor: Stra       | tacore   |   |
| Da  |  | artea:   | 10/1   | Samplin   | a & Tosting   | pietea   | 10/         | 11/10  |  | Logged by: DD   |  | 00  | SHECK                                       | ей Бу: ЈБ        |  |   |
|   |  | y<br>  |  | Samping   | g & resung  | â  | Ê           |  | _  |   |  |   |   |                  |  |   |
| Method  | Resistance   | Casing   | Water  | San<br>Fiel   | nple or<br>ld Test  | RL (m AH   | Depth (n    | Graphic<br>Log   | Classification   | SOIL TYPE, plasticity or particle of<br>colour, secondary and minor or<br>ROCK TYPE, grain size and ty<br>fabric & texture, strength, we<br>defects and structure   | characteristic,<br>omponents<br>/pe, colour,<br>eathering,<br>e  | Moisture<br>Condition   | Consistency<br>Relative<br>Density          | & C              | STRUCTI<br>other Obse  | URE<br>ervations  |
|   |  |  |  |   |   | 4-   |             |  |  | 0.13m_ASPHALT: corase grained g<br>FILL: SAND: fine to medium   | ravel, black   | -   |   | PAVEMENT<br>FILL |  | :   |
|   |  |  |  | SPT 0.50 - 0.9<br>0, 0, 0 N=0                         | 95 m  |  |             |  |  | SAND: fine to medium graine   | <br>ed, pale   | -   |   | MARINE           |  |   |
|   |  |  |  | B 1.00 - 1.20 r                                       | m   |  | - 1         |  | SP   |   |  |   | L   |                  |  | -   |
|   |  |  |  |   |   | 3-   |             |  |  |   |  |   |   |                  |  |   |
|   | E  |  | Not Encountered  | B 1.50 - 2.00 r<br>SPT 1.50 - 1.9<br>3, 5, 6 N=11     | m<br>95 m   | 2-   | -<br>2<br>- |  |  | 1.50m<br>Sitty SAND: fine to medium g<br>brown  |  | D   |   | -                |  | -<br>-<br>-   |
|   |  |  |  |   |   |  |             |  | SP   |   |  |   | MD  |                  |  | -   |
|   |  |  |  | SPT 3.00 - 3.4<br>5. 12. 15 N=2                       | 15 m<br>7   |  | -3          |  |  | Turning white/ pale brown in  | colour   |   |   |                  |  | -   |
|   |  |  |  |   |   | 1-   |             |  |  |   |  |   | -   |                  |  |   |
|   |  |  |  |   |   | -  | -4          |  |  | 4.00m   |  | D to M  |   |                  |  | -   |
|   |  |  |  |   |   | 0-   |             |  |  | TERMINATED AT 4.00 m<br>Refusal<br>Borehole Refusal Depth Coll  | lapse at 4.0m  |   |   |                  |  |   |
| p   |  |  |  |   |   |  |             |  |  | 10/11/18 at 16:20   |  |   |   |                  |  | -   |
|   |  |  |  |   |   |  | -5          |  |  |   |  |   |   |                  |  | -   |
|   |  |  |  |   |   | -1-  |             |  |  |   |  |   |   |                  |  | -   |
| 0   |  |  |  |   |   |  |             |  |  |   |  |   |   |                  |  | -   |
| 1   |  |  |  |   |   |  | -6          |  |  |   |  |   |   |                  |  | -   |
|   |  |  |  |   |   | -2   |             |  |  |   |  |   |   |                  |  | -   |
|   |  |  |  |   |   |  | - 7         |  |  |   |  |   |   |                  |  | -   |
| 5   |  |  |  |   |   | -3-  |             |  |  |   |  |   |   |                  |  | -   |
| 5   |  |  |  |   |   |  |             |  |  |   |  |   |   |                  |  | -   |
|   |  |  |  |   |   |  | -8          |  |  |   |  |   |   |                  |  | -   |
|   |  |  |  |   |   | -4 —   |             |  |  |   |  |   |   |                  |  | -   |
|   |  |  |  |   |   |  |             |  |  |   |  |   |   |                  |  | -   |
|   |  |  |  |   |   |  | -9          |  |  |   |  |   |   |                  |  | -   |
|   |  |  |  |   |   | -5   |             |  |  |   |  |   |   |                  |  | -   |
|   |  |  |  |   |   |  |             |  |  |   | 1  |   |   |                  |  | -   |
| M ER H H P Si A A A A A A A A A A A A A A A A A A | ETHOL<br>X E<br>A H<br>T S<br>N A<br>F<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S | )<br>xcavato<br>ipper<br>and aug<br>ush tube<br>polic drill<br>r hamm<br>ercussic<br>hort spir<br>bild fligh<br>bild fligh<br>bild fligh<br>ollow flig<br>'ashbori<br>ock rolle  | r bucke<br>er<br>ing<br>er<br>on sam<br>al auge<br>t auge<br>t auge<br>ght auge<br>c drillin<br>er | et<br>pler<br>er<br>r: V-Bit<br>r: TC-Bit<br>per<br>g | PENETRATION<br>VE Very Easy (N<br>E Easy<br>H Hard<br>VH Very Hard (R<br>WATER<br>Water L<br>Shown<br>water in<br>Water out | o Resistan<br>efusal)<br>evel on E<br>flow<br>utflow | ce)<br>Date | FIE<br>SP<br>HP<br>DC<br>PSI<br>MC<br>PB<br>IMF<br>PID<br>VS | LD TE<br>-<br>P -<br>-<br>T -<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>- | ESTS<br>Standard Penetration Test<br>Hand/Pocket Penetrometer<br>Dynamic Cone Penetrometer<br>Perth Sand Penetrometer<br>Moisture Content<br>Plate Bearing Test<br>Borehole Impression Test<br>Photoionisation Detector<br>Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa) | SAMPLES           B         -         Buil           D         -         Dist           ES         -         Env           U         -         Thir           MOISTURE         D         -         Dry           M         -         Mois           W         -         Weil         Heil           PL         -         Play         LL           W         -         Mois         Weil | k disturbe<br>turbed sa<br>irronment<br>n wall tube<br>st<br>t<br>stic limit<br>stic limit<br>sture con | d sample<br>mple<br>al sample<br>e 'undistu | e<br>rrbed'      | SOIL CON           VS         -           S         -           F         -           F         -           St         -           VSt         -           H         -           RELATIVI           VL         -           L         -           MD         -           D         -           VD         - | VSISTENCY<br>Very Soft<br>Soft<br>Firm<br>Very Stiff<br>Hard<br>E DENSITY<br>Very Loose<br>Jense<br>Vedium Dense<br>Jense<br>Very Dense |
| Reat  | efer to ex<br>breviatio  | planatory<br>ns and ba   | notes f<br>asis of d   | or details of<br>escriptions                          |   | (  | CAF         |  | 0 (  | NSW/ACT) PTY L  | _TD  |   |   | I                |  |   |

|            |                     | $\supset$             | Ca                  | arc                  | lno'                                  |                           |                     |                |                         |                |   |   | B                     | ORE                                | HOLE LOG SHEET                                  |
|------------|---------------------|-----------------------|---------------------|----------------------|---------------------------------------|---------------------------|---------------------|----------------|-------------------------|----------------|---|---|-----------------------|------------------------------------|---|
|            | Clie<br>Proj<br>Loc | nt:<br>ject:<br>ation | ם<br>ם<br>ו: א      | )WP<br>Detai<br>(vee | Australia<br>led Site Ir<br>magh Infa | nvestigation ar           | nd Geot             | techi<br>ah. N | nical Ir<br>SW          | ives           | tigation  |   |                       | F                                  | Iole No: BH05                                   |
|            | Pos                 | ition                 | : E33               | 0122                 | .818 N624                             | 1979.746 56 N             | MGA94               | <b>,</b> ,     |                         |                | Angle from Horizontal:  | 90°   | S                     | Surface                            | Elevation: 4.560 m AHD                          |
|            | Rig                 | Туре                  | : Ute               | e Mo                 | unted Dril                            | II Rig                    |                     |                |                         |                | Mounting: Light Vehicle   | e   | 0                     | Driller:                           | TR  |
| Ľ          | Cas                 | ing D                 | Diame               | eter:                |                                       |                           |                     |                |                         |                |   |   | 0                     | Contra                             | ctor: Stratacore                                |
| H          | Data                | a Sta                 | rted:               | 10/1                 | 1/18                                  | Date Com                  | pleted:             | 10/            | 11/18                   |                | Logged By: DD   |   | (                     | Checke                             | ed By: JB                                       |
| ╞          |                     | Drilling              |                     |                      | Sampl                                 | ing & Testing             |                     |                |                         |                | Mater   | rial Description  |                       |                                    |   |
|            | Method              | Resistance            | Casing              | Water                | Sa<br>Fi                              | ample or<br>ield Test     | RL (m AHI           | Depth (m       | Graphic<br>Log          | Classification | SOIL TYPE, plasticity or particle ch<br>colour, secondary and minor cor<br>ROCK TYPE, grain size and typ<br>fabric & texture, strength, weal<br>defects and structure | haracteristic,<br>imponents<br>be, colour,<br>athering, | Moisture<br>Condition | Consistency<br>Relative<br>Density | STRUCTURE<br>& Other Observations               |
|            | A                   |                       |                     |                      |                                       | -                         |                     |                | لد علد علد<br>علد علد ع |                | 0.20m Gravelly SAND: fine grained, b  | black   |                       |                                    |   |
|            |                     |                       |                     |                      | D 0.20 - 0.5                          | 0 m                       | +                   |                |                         |                | Silty SAND: fine grained, dark  | < grey  |                       |                                    | MARINE -  |
|            |                     |                       |                     |                      | SPT 0.50 - 0<br>3, 6, 6 N=12          | 0.95 m                    | ] 4-                |                |                         |                |   |   |                       |                                    | -   |
|            |                     |                       |                     |                      |                                       |                           |                     | - 1            |                         |                |   |   | р                     |                                    | -   |
|            |                     |                       |                     |                      | D 1.00 - 1.10                         | 0 m                       | 1 +                 | •              |                         | SP             |   |   | 5                     | L to MD                            | -   |
|            |                     |                       |                     |                      | 007450                                |                           | _ +                 |                |                         |                |   |   |                       |                                    | -   |
|            |                     |                       |                     |                      | SPT 1.50 - 1<br>2, 3, 4 N=7           | 1.95 m                    | / °]                |                |                         |                |   |   |                       |                                    | -   |
|            |                     |                       |                     |                      |                                       |                           | +                   | -2             |                         | <u> </u>       | 2.00m   |   |                       |                                    |   |
|            |                     |                       |                     | red                  |                                       |                           |                     |                |                         |                | Silty SAND: fine grained, brow  | wn  |                       |                                    | -   |
|            |                     |                       |                     | counte               |                                       |                           | 2                   |                |                         |                |   |   |                       |                                    | -   |
|            | AD/T                |                       |                     | ot Enc               |                                       |                           |                     |                |                         |                |   |   |                       |                                    | -   |
|            |                     |                       |                     | Ž                    | SPT 3.00 - 3                          | 3.45 m                    | †                   | - 3            |                         |                |   |   |                       |                                    | -   |
|            |                     |                       |                     |                      | 3, 5, 9 N=14                          | ļ                         | 11                  |                |                         | SP             |   | [   | D to M                | MD                                 | -   |
|            |                     |                       |                     |                      |                                       |                           | 1 1-                |                |                         |                |   |   |                       |                                    | -   |
|            |                     |                       |                     |                      |                                       |                           | }                   |                |                         |                |   |   |                       |                                    | -   |
| 0          |                     |                       |                     |                      |                                       |                           |                     | -4             |                         |                |   |   |                       |                                    | -   |
| n - h      |                     |                       |                     |                      |                                       |                           | ] +                 |                |                         |                | 4.50m   |   |                       |                                    | -   |
|            |                     |                       |                     |                      | SPT 4.50 - 4<br>2, 3, 9 N=12          | 4.95 m<br>2               | ] •-                |                |                         |                | SAND: fine to medium grained brown  | d, pale   | м                     |                                    | -   |
| 0          |                     |                       |                     |                      |                                       |                           | 11                  | -5             |                         | SP             |   |   | IVI                   | MD                                 | -   |
| 2          |                     |                       |                     |                      |                                       |                           | +                   | -              |                         |                |   |   |                       |                                    | -   |
|            | V                   |                       |                     |                      |                                       |                           | <u>↓</u> 1 <u>↓</u> |                |                         |                | 5.50m   |   |                       |                                    | -   |
| r<br>Gei   |                     |                       |                     |                      |                                       |                           | [                   |                |                         |                | Target depth  |   |                       |                                    | -   |
| 1          |                     |                       |                     |                      |                                       |                           | +                   | -6             |                         |                |   |   |                       |                                    | -   |
| 5.00.0     |                     |                       |                     |                      |                                       |                           | ]                   |                |                         |                |   |   |                       |                                    | -   |
| 00.4       |                     |                       |                     |                      |                                       |                           | -2-                 |                |                         |                |   |   |                       |                                    | -   |
|            |                     |                       |                     |                      |                                       |                           | †                   |                |                         |                |   |   |                       |                                    | -   |
| 17 10      |                     |                       |                     |                      |                                       |                           |                     | -7             |                         |                |   |   |                       |                                    | _   |
|            |                     |                       |                     |                      |                                       |                           | +                   |                |                         |                |   |   |                       |                                    | -   |
| WII BLIN   |                     |                       |                     |                      |                                       |                           | -3-                 |                |                         |                |   |   |                       |                                    | -   |
| 2 na       |                     |                       |                     |                      |                                       |                           | 1                   | - 8            |                         |                |   |   |                       |                                    | -   |
|            |                     |                       |                     |                      |                                       |                           | {                   |                |                         |                |   |   |                       |                                    | -   |
| 0000       |                     |                       |                     |                      |                                       |                           | _ †                 |                |                         |                |   |   |                       |                                    | -   |
|            |                     |                       |                     |                      |                                       |                           | *1                  |                |                         |                |   |   |                       |                                    | -   |
|            |                     |                       |                     |                      |                                       |                           | +                   | -9             |                         |                |   |   |                       |                                    | _   |
|            |                     |                       |                     |                      |                                       |                           | †                   |                |                         |                |   |   |                       |                                    | -   |
|            |                     |                       |                     |                      |                                       |                           | -5-                 |                |                         |                |   |   |                       |                                    | -   |
|            |                     |                       |                     |                      |                                       |                           |                     |                |                         |                |   |   |                       |                                    | -   |
|            | ME                  | THOD                  | I                   |                      |                                       | PENETRATION               | 1 -                 |                | FIE                     | LD TE          | ESTS  | SAMPLES   |                       | <u> </u>                           | SOIL CONSISTENCY                                |
|            | EX<br>R             | Ex<br>Rip             | cavato<br>oper      | bucke                | et                                    | VE Very Easy (N<br>F Easy | lo Resistanc        | e)             | SP<br>HP                | Г-<br>-        | Standard Penetration Test<br>Hand/Pocket Penetrometer   | B - Bulk d<br>D - Disturl                               | listurbe<br>bed sar   | d sample<br>nple                   | VS - Very Soft<br>S - Soft                      |
|            | HA<br>PT            | Ha                    | ind aug<br>sh tube  | er<br>e              |                                       | F Firm<br>H Hard          |                     |                | DC                      | -<br>P -       | Dynamic Cone Penetrometer   | ES - Enviro<br>U - Thin w                               | onmenta<br>vall tube  | al sample<br>e 'undistu            | rbed' F - Firm<br>St - Stiff                    |
| 5          | SO<br>AH            | N So<br>Air           | nic dril<br>hamm    | ing<br>er            | .                                     | VH Very Hard (R           | efusal)             |                | PSI<br>MC               | -              | Perth Sand Penetrometer<br>Moisture Content   | MOISTURE  |                       |                                    | VSt - Very Stiff<br>H - Hard                    |
| Ĩ          | PS<br>AS            | Pe<br>Sh              | rcussic<br>ort spir | n sam<br>al aug      | pler<br>er                            | WATER<br>Water L          | evel on D           | ate            | PB <sup>-</sup><br>IMP  | Г-<br>-        | Plate Bearing Test<br>Borehole Impression Test  | D - Dry<br>M - Moist                                    |                       |                                    |   |
|            | AD<br>AD            | /V So<br>/T So        | lid fligh           | t auge<br>t auge     | r: V-Bit<br>r: TC-Bit                 | shown                     | flow                |                | PID                     | -              | Photoionisation Detector  | W - Wet<br>PL - Plastic                                 | c limit               |                                    | VL - Very Loose<br>L - Loose<br>MD Modium Doose |
| <b>t</b> . | WE                  | - ⊓0<br>3 Wa<br>Ro    | ashbori<br>ck rolle | e drillin<br>r       | g                                     | - water ou                | utflow              |                | 1 13                    | -              | R=Resdual (uncorrected kPa)   | LL - Liquid<br>w - Moistu                               | limit<br>ure conf     | tent                               | D - Dense<br>VD - Verv Dense                    |
|            | Refe                | er to exp             | lanatory            | notes fo             | or details of                         |                           | ·                   | אר             |                         |                |   |   |                       |                                    | .,  |
| Ş          | abb                 | reviation             | is and ba           | isis of d            | escriptions                           |                           | L C                 | 거나             | יעוטי                   | U (            | INSVVAUL PITL   | - יי  |                       |                                    |   |

|  | $\square$  | Cá  | Carcino         TEST PIT LOG SHEET           DWP Australia         She investigation         Angle from Horizontal: 90°         Surface Elevation:           Sample of Test         School         Sorged State |  |   |                              |  |                |   |   |   |   |  |  |  |
|--|--|---|---|--|---|------------------------------|--|----------------|---|---|---|---|--|--|--|
| Clie<br>Pro<br>Loc   | ent:<br>ject:<br>ation                           | ם<br>ם<br>ו: א  | OWP<br>Detai<br>(vee  | Australia<br>led Site Ir<br>magh Infa    | vestigation a   | ind Ge<br>(veema             | otechn<br>agh. N                                   | ical<br>SW     | Investigation   |   | ŀ   | Hole No: TP01   |  |  |  |
| Pos  | sition   | : E33   | 0227  | .528 N624                                | 2031.053 56   | MGA9                         | 4  |                | Angle from Horizontal:  | 90°   | Surface                                     | e Elevation:  |  |  |  |
| Mad  | chine  | Туре  | e: 10   | tonne Ex                                 | cavator   |                              |  |                | Excavation Method:  |   |   |   |  |  |  |
| Project:       Detailed Site Investigation and Geotechnical Investigation       Site Investigation         Location:       Kyeemagh Infants School, Kyeemagh, NSW       Job No: 5017190157       Stret:         Position:       E330227.528 N6242031.053 56 MGA34       Angle from Horizontal: 90°       Surface Elevation:         Machine Type: 10 tonne Excavator       Excavation Method:       Contractor:         Date Excavatio:       Sample or       Excavation       Material Description         0       0       Sample or       Excavation       Sample or       Excavation         0       0       0       Sample or       Excavation       Sample or       Excavation         0       0       0       0       Sample or       Excavation       Sample or       Excavation       Sample or       Samp |  |   |   |  |   |                              |  |                |   |   |   |   |  |  |  |
|  |  | ion   | ea: 1   | 0/11/10<br>Sampl                         | ing & Testing   |                              |  |                | Logged by: JG   | Description   | CHECKE                                      | а Бу:   |  |  |  |
| $\vdash$   |  |   |   | Sampi                                    |   |                              |  | _              |   |   |   |   |  |  |  |
| Method   | Resistance                                       | Stability   | Water   | Si<br>Fi                                 | ample or<br>ield Test   | Depth (n                     | Graphic<br>Log                                     | Classification | SOIL TYPE, plasticity or particle charac<br>colour, secondary and minor compor<br>ROCK TYPE, grain size and type, cc<br>fabric & texture, strength, weather<br>defects and structure  | cteristic,<br>nents<br>blour, is<br>ing, WO   | Consistency<br>Relative<br>Density          | STRUCTURE<br>& Other Observations   |  |  |  |
|  |  |   |   |  |   | -                            | لد علد علد<br>علد علد ع<br>لد علد علد<br>علد علد ع |                | Silty SAND: fine to medium grained, po<br>graded, black, with coal ash layer  | porly D   |   | TOPSOIL<br>0.00 m: PID = 0.1ppm -   |  |  |  |
|  |  |   |   | ES 0.20 m<br>TP01_0.2                    |   |                              |  | <              | FILL: SAND: fine to medium grained, u<br>brown yellow grey  | Iniform,  |   | FILL<br>0.20 m: PID = 0.0 ppm   |  |  |  |
| EX-  |  |   |   | ES 0.90 m<br>TP01_0.9                    |   | -                            |  |                | 0.90m   |   |   | -   |  |  |  |
|  |  |   |   |  |   | 1.0<br>-<br>-                |  |                | SAND: fine to medium grained, uniform<br>brown  | n, yellow<br>M  | F   | MARINE -  |  |  |  |
| <b>•</b>   |  |   |   |  |   | 1.5                          |  |                | 1.40m<br>TERMINATED AT 1.40 m   |   |   |   |  |  |  |
|  |  |   |   |  |   | - 1.5                        |  |                | l arget depth   |   |   |   |  |  |  |
|  |  |   |   |  |   | -                            |  |                |   |   |   | -   |  |  |  |
|  |  |   |   |  |   | -2.0                         |  |                |   |   |   | -   |  |  |  |
|  |  |   |   |  |   | Ē                            |  |                |   |   |   | -   |  |  |  |
|  |  |   |   |  |   | -2.5                         |  |                |   |   |   | -   |  |  |  |
|  |  |   |   |  |   | -                            |  |                |   |   |   | -   |  |  |  |
|  |  |   |   |  |   | -3.0                         |  |                |   |   |   | -   |  |  |  |
|  |  |   |   |  |   | -                            |  |                |   |   |   | -   |  |  |  |
|  |  |   |   |  |   | -<br>3.5                     |  |                |   |   |   | -   |  |  |  |
|  |  |   |   |  |   |                              |  |                |   |   |   |   |  |  |  |
|  |  |   |   |  |   | -4.0                         |  |                |   |   |   | -   |  |  |  |
|  |  |   |   |  |   |                              |  |                |   |   |   |   |  |  |  |
|  |  |   |   |  |   | -<br>                        |  |                |   |   |   | -   |  |  |  |
|  |  |   |   |  |   | -<br>-<br>-                  |  |                |   |   |   |   |  |  |  |
| ME   | THOD   |   |   |  | PENETRATION   | 1                            |  | F              | FIELD TESTS   | SAMPLES   |   |   |  |  |  |
| R<br>HA<br>PT<br>SC<br>AH<br>PS  | Rij<br>Rij<br>N Ha<br>DN So<br>I Air<br>S Pe     | cavato<br>pper<br>and aug<br>ush tube<br>onic drill<br>r hamm<br>ercussic | er<br>er<br>ing<br>er<br>on sam   | pler                                     | VE Very Easy (<br>E Easy<br>F Firm<br>H Hard<br>VH Very Hard (<br>WATER | No Resista<br>Refusal)       | ince)  | F              | Pri     -     Standard Pénétrátion lést       HP     -     Hand/Pocket Penetrometer       OCP     Dynamic Cone Penetrometer       'SP     -     Perth Sand Penetrometer       MC     Moisture Content       'PBT     -     Plate Bearing Test | B - Bulk disturbe<br>D - Disturbed sa<br>ES - Environment<br>U - Thin wall tub<br>MOISTURE<br>D - Dry | a sample<br>mple<br>al sample<br>e 'undistu | rbed' VS - Very Soft<br>S - Soft<br>F - Firm<br>St - Stiff<br>VSt - Very Stiff<br>H - Hard<br><b>RELATIVE DENSITY</b> |  |  |  |
| AS<br>AD<br>AD<br>HF<br>WE<br>RF   | , Sh<br>D/V Sc<br>D/T Sc<br>FA Ho<br>B W<br>R Ro | blid fligh<br>blid fligh<br>blow flig<br>ashbor<br>bck rolle              | ai auge<br>t auge<br>t auge<br>ght aug<br>e drillin<br>er   | ei<br>r: V-Bit<br>r: TC-Bit<br>jer<br>ig | Water<br>shown<br>water i<br>water o                                    | Level on<br>nflow<br>outflow | Date   | F<br>\         | MP       -       Borehole Impression Test         PID       -       Photoionisation Detector         /S       -       Vane Shear; P=Peak,         R=Resdual (uncorrected kPa)   | M - Móist<br>W - Wet<br>PL - Plastic limit<br>LL - Liquid limit<br>w - Moisture cor                   | itent                                       | VL - Very Loose<br>L - Loose<br>MD - Medium Dense<br>D - Dense<br>VD - Very Dense                                     |  |  |  |
| Ref  | fer to exp<br>previatior                         | planatory<br>ns and ba  | notes f<br>isis of d  | or details of<br>escriptions             |   |                              | CAR  | D              | NO (NSW/ACT) PTY L  | TD  |   |   |  |  |  |

|                 | $\mathbb{D}$   |  | arc  | lno  |  |                              |                         |                       |   |   | TE  | ST PIT LOG SHEET   |
|-----------------|--|--|--|--|--|------------------------------|-------------------------|-----------------------|---|---|---|--|
| Clie            | ent:<br>oject:   | <br>   | OWP<br>Detai   | Australia<br>led Site Ir                       | vestigation a  | nd Ge                        | otechn                  | ical                  | Investigation   |   | ł   | Hole No: TP02  |
| Pos             | sitior   | n: E33   | 0192   | .866 N624                                      | 12040.364 56   | MGA9                         | 4                       |                       | Angle from Horizontal: 90°  | :   | Surfac  | e Elevation:   |
| Ma              | chine  | e Type   | e: 10  | tonne Ex                                       | cavator  |                              |                         |                       | Excavation Method:  |   | <u> </u>                                      |  |
| Exc             |  | tion D   | Imen   | SIONS:   |  |                              |                         |                       | Loggod By: JG   |   | Contra  | ctor:  |
|                 |  | tion   |  | Sampl  | ing & Testing  |                              |                         |                       | Logged By. JG   |   | CHECK   | eu by.   |
|                 |  |  |  | Gampi  |  | -                            |                         | -                     |   |   |   |  |
| Method          | Resistance   | Stability  | Water  | Si<br>Fi                                       | ample or<br>ield Test  | Depth (m                     | Graphic<br>Log          | Classification        | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure  | Moisture<br>Condition                                 | Consistency<br>Relative<br>Density            | STRUCTURE<br>& Other Observations  |
| A               |  |  |  | ES 0.10 m                                      |  |                              | لد علد علد<br>علد علد ع |                       | 0.10m Silty SAND: fine to medium grained, poorly  | _   |   | TOPSOIL  |
|                 |  |  |  | ES 0.40 m<br>TP02_0.4                          |  | -                            |                         |                       | FILL: Silty SAND: fine to medium grained, uniform, yellow brown   | D   |   | FILL   |
|                 |  |  |  |  |  | †                            |                         |                       | 0.40m SAND: fine to medium grained, uniform, yellow   | +   | +   |  |
|                 |  |  |  |  |  | - 0.5                        |                         |                       | brown   | м   | F   |  |
|                 |  |  |  |  |  | - 1.0                        | <u>- National Anni</u>  |                       | 0.90m<br>TERMINATED AT 0.90 m<br>Target depth   |   |   | -  |
|                 |  |  |  |  |  | -                            |                         |                       |   |   |   |  |
|                 |  |  |  |  |  | - 15                         |                         |                       |   |   |   |  |
|                 |  |  |  |  |  | -                            |                         |                       |   |   |   |  |
|                 |  |  |  |  |  | -                            |                         |                       |   |   |   |  |
|                 |  |  |  |  |  | -2.0                         |                         |                       |   |   |   | -  |
| ools            |  |  |  |  |  | -                            |                         |                       |   |   |   |  |
| onitoring I     |  |  |  |  |  | -2.5                         |                         |                       |   |   |   | -  |
| , Photo, M      |  |  |  |  |  | -                            |                         |                       |   |   |   |  |
| AGSKIA          |  |  |  |  |  | - 3.0                        |                         |                       |   |   |   | -  |
| JUU Large       |  |  |  |  |  | -                            |                         |                       |   |   |   |  |
| 70.01 / 13      |  |  |  |  |  | -<br>3.5                     |                         |                       |   |   |   | -  |
| 12/2018 16      |  |  |  |  |  | -                            |                         |                       |   |   |   |  |
| -IIe>> 03/      |  |  |  |  |  |                              |                         |                       |   |   |   |  |
| -Curawing       |  |  |  |  |  | -                            |                         |                       |   |   |   |  |
| 68.GPJ <        |  |  |  |  |  | -                            |                         |                       |   |   |   |  |
|                 |  |  |  |  |  | -4.5<br>-                    |                         |                       |   |   |   | -  |
| АGH ВОКЕН       |  |  |  |  |  | -                            |                         |                       |   |   |   |  |
| NI 2            | <br>Ethoi  | <br>D  |  |  | PENETRATION  |                              |                         | F                     | ELD TESTS SAMPLES   | 1   |   | SOIL CONSISTENCY   |
|                 | K E<br>R<br>A H<br>DN S                                    | xcavato<br>Ripper<br>land aug<br>Push tub<br>Sonic dril<br>Nir hamm  | r bucke<br>jer<br>e<br>ling<br>er                                      | ət   | VE Very Easy (I<br>E Easy<br>F Firm<br>H Hard<br>VH Very Hard (I | No Resista<br>Refusal)       | ance)                   | S<br>H<br>D<br>P<br>N | PT     - Standard Penetration Test     B     - Bu       P     - Hand/Pocket Penetrometer     D     - Dis       CP     - Dynamic Cone Penetrometer     ES     - En       SP     - Perth Sand Penetrometer     U     - Th       C     - Moisture Content     MOISTURE | lk disturbe<br>sturbed sa<br>vironment<br>in wall tub | ed sample<br>imple<br>al sample<br>e 'undistu | VS     - Very Soft       S     - Soft       F     - Firm       urbed'     St       VSt     - Very Stiff       H     - Hard                                   |
| CIGLE LOG CARDN | 5 P<br>5 S<br>5/V S<br>5/T S<br>5/T S<br>7 R<br>8 V<br>8 R | vercussio<br>Short spin<br>Solid fligh<br>Solid fligh<br>Solid fligh<br>Solid fligh<br>Solid fligh<br>Sock rolle | on sam<br>ral auge<br>it auge<br>it auge<br>ght aug<br>e drillin<br>er | pier<br>er<br>r: V-Bit<br>r: TC-Bit<br>er<br>g | WATER<br>Water  <br>shown<br>water in<br>water of                | Level on<br>nflow<br>outflow | Date                    | P<br>IN<br>P<br>V     | BT     - Plate Bearing Test     D     - Dn       IP     - Borehole Impression Test     M     - Md       ID     - Photoionisation Detector     W     - We       S     - Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa)     LL     - Liq<br>w                     | /<br>vist<br>astic limit<br>uid limit<br>visture cor  | ntent   | RELATIVE DENSITY         VL       - Very Loose         L       - Loose         MD       - Medium Dense         D       - Dense         VD       - Very Dense |
| Re<br>ab        | fer to e   | xplanatory   | notes fo   | or details of<br>escriptions                   |  |                              | CAR                     |                       | IO (NSW/ACT) PTY LTD  |   |   | 1  |

|  | $\supset$   | Cá  | arc   | lno   |   |  |  |  |  |   | TE   | ST PIT LOG SHEET  |
|--|---|---|---|---|---|--|--|--|--|---|--|---|
| Clier<br>Proje<br>Loca   | nt:<br>ect:<br>atior  | ם<br>נ<br>ו: 1  | )WP<br>)etai<br>(yee  | Australia<br>led Site Ir<br>magh Infa         | nvestigation a<br>ints School, K  | nd Ge<br>(yeema  | otechn<br>agh, NS                                  | ical<br>SW                                     | Investigation<br>Job No: 5017190157  |   | ł  | Hole No: TP03<br>Sheet: 1 of 1  |
| Posi   | tion  | : 56  | MGA   | 94  |   |  |  |  | Angle from Horizontal: 90°   |   | Surfac                                       | e Elevation:  |
| Mac  | hine  | Туре  | <u>): 10</u>  | tonne Ex                                      | cavator   |  |  |  | Excavation Method:   |   |  |   |
| EXCa   | Fre   | ion D<br>ravat  | men<br>od: 1  | 0/11/18                                       |   |  |  |  | Logged By: IG  |   | Contra                                       | ed By:  |
| Exc  | cavat   | tion  | 50. 1   | Samp  | ina & Testina   |  |  |  | Material Descriptio  | n   | Onech  | cu by.  |
|  |   |   |   |   |   | Ê  |  | Ę  |  |   |  |   |
| Method   | Resistance  | Stability   | Water   | S   | ample or<br>ield Test   | Depth (r   | Graphic<br>Log                                     | Classificatio                                  | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure   | Moisture<br>Condition   | Consistency<br>Relative<br>Density           | STRUCTURE<br>& Other Observations   |
| 1  |   |   |   | ES 0.20 m<br>TP03_0.2                         |   | -  | لت علت علت<br>علت علت ع<br>لت علت علت<br>علت علت ع |  | Silty SAND: fine to medium grained, poorly<br>graded, grey brown mottled white<br>0.20m  | D   |  | TOPSOIL<br>0.00 m: PID = 0.2ppm   |
|  |   |   |   |   |   |  |  |  | FILL: Silty SAND: fine to medium grained, poorly graded, white grey brown mottled black  |   | -  | FILL  |
| EX -   |   |   |   | ES 1.20 m<br>TP03_1.2                         |   | - 1.0  |  |  | 1.20m<br>SAND: fine to medium grained, uniform, yellow   |   |  |   |
| V  |   |   |   |   |   | -<br>- 1.5<br>-  |  |  | 1.70m  | м   | F  |   |
|  |   |   |   |   |   | - 2.0  |  |  | Target depth   |   |  |   |
|  |   |   |   |   |   |  |  |  |  |   |  |   |
|  |   |   |   |   |   | -  |  |  |  |   |  |   |
|  |   |   |   |   |   | - 3.0  |  |  |  |   |  |   |
|  |   |   |   |   |   | -<br>3.5<br>-<br>-                                     |  |  |  |   |  |   |
|  |   |   |   |   |   | - 4.0  |  |  |  |   |  |   |
|  |   |   |   |   |   | -<br>-<br>- 4.5  |  |  |  |   |  |   |
|  |   |   |   |   |   | -  |  |  |  |   |  |   |
| MET<br>EX<br>R<br>HA<br>PSON<br>AH<br>PS<br>AD/<br>HFA<br>WB<br>RR | FHOD<br>EX<br>Ri<br>Ha<br>Pu<br>Ai<br>Pe<br>St<br>V<br>Sc<br>T<br>Sc<br>W<br>Ro | ccavato<br>pper<br>and aug<br>ush tube<br>onic drill<br>r hamm<br>ercussic<br>nort spir<br>bild fligh<br>bild fligh<br>bild fligh<br>bild fligh<br>bild shbor<br>cock rolle | · bucke<br>er<br>ing<br>er<br>n sam<br>al auge<br>t auge<br>t auge<br>ght auge<br>ght auge<br>c drillin<br>er | et<br>er<br>r: V-Bit<br>r: TC-Bit<br>jer<br>g | PENETRATION<br>VE Very Easy (<br>E Easy<br>F Firm<br>H Hard<br>VH Very Hard (<br>WATER<br>Water<br>Water in<br>water of | No Resista<br>Refusal)<br>Level on<br>nflow<br>putflow | nnce)<br>Date                                      | F<br>S<br>H<br>C<br>P<br>M<br>P<br>I<br>F<br>V | ELD TESTS       SAMPLE         PT       - Standard Penetration Test       B       - E         P       - Hand/Pocket Penetrometer       D       - E         CP       Dynamic Cone Penetrometer       U       - T         SP       - Perth Sand Penetrometer       U       - T         C       Moisture Content       MOISTUI       O         3T       - Plate Bearing Test       D       - E         IP       - Borehole Impression Test       M       - M         S       - Vane Shear; P=Peak,       LL       - L         R=Resdual (uncorrected kPa)       w       - M | S<br>Bulk disturbed<br>Disturbed sa<br>Invironment<br>hin wall tub<br>RE<br>Ory<br>Aoist<br>Vet<br>Plastic limit<br>Iquid limit<br>Moisture cor | ed sample<br>imple<br>tal sample<br>'undistu | SOIL CONSISTENCY       e     VS     Very Soft       s     Soft     Soft       arbed'     F     Firm       st     Stiff     VST       VST     VerySiff       H     Hard       RELATIVE DENSITY       VL     VeryLoose       L     Loose       MD     Medium Dense       VD     VeryDense |
| Refe<br>abbre  | r to exp<br>eviation  | planatory<br>ns and ba  | notes for<br>asis of d  | or details of<br>escriptions                  |   |  | CAR  |  | IO (NSW/ACT) PTY LTD   |   |  | 1   |

|             |                       | ) Cá                     | arc                  | Ino  |                         |                         |                |  |                           | TE                                 | ST PIT LOG SHEET                  |
|-------------|-----------------------|--------------------------|----------------------|--|-------------------------|-------------------------|----------------|--|---------------------------|------------------------------------|-----------------------------------|
| Clie<br>Pro | ent:<br>ject:<br>atio | ם<br>: ב<br>n: א         | OWP<br>Detai<br>Kvee | Australia<br>led Site Investigation<br>magh Infants School | on and Ge<br>ol. Kveema | otechn<br>agh. N        | ical<br>SW     | Investigation  |                           | ł                                  | Hole No: TP04                     |
| Pos         | sitio                 | n: See                   | atta                 | ched plan  |                         | <b>.</b>                |                | Angle from Horizontal: 90°   |                           | Surfac                             | e Elevation:                      |
| Mad         | chin                  | е Туре                   | e: 10                | tonne Excavator  |                         |                         |                | Excavation Method:   |                           |                                    |                                   |
| Exc         | ava                   | tion D                   | imen                 | sions:   |                         |                         |                | Longood Dyn. JC  |                           | Contra                             | ctor:                             |
| Dat         |                       | cavat                    | ea: 1                | 0/11/18  | ~                       |                         |                | Logged By: JG  |                           | Спеск                              | ea By:                            |
|             | kcava                 |                          |                      | Sampling & Testin  | ig                      |                         |                |  |                           |                                    |                                   |
| Method      | Resistance            | Stability                | Water                | Sample or<br>Field Test                                    | Depth (m                | Graphic<br>Log          | Classification | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure | Moisture<br>Condition     | Consistency<br>Relative<br>Density | STRUCTURE<br>& Other Observations |
|             |                       |                          |                      | ES 0.10 m  |                         | ند علد علد<br>علد علد ع |                | 0.10m Silty SAND: fine to medium grained, poorly   | D                         |                                    | TOPSOIL                           |
|             |                       |                          |                      | ES 0.40 m  |                         |                         |                | FILL: Silty SAND: fine to medium grained, poorly   |                           |                                    | FILL                              |
|             |                       |                          |                      | 1P04_0.4   | -                       |                         |                | graded, brown grey   | D                         |                                    | 0.10 m: PID = 1.7ppm              |
| Ц Н<br>Ш    |                       |                          |                      |  |                         |                         |                | SAND: fine to medium grained, uniform, yellow  | +                         |                                    |                                   |
|             |                       |                          |                      |  | _ 0.5                   |                         |                | brown  |                           |                                    |                                   |
|             |                       |                          |                      |  | -                       |                         |                |  | м                         | F                                  |                                   |
| <b>Y</b>    | -                     | _                        |                      |  |                         | 0.006                   |                | 0.90m<br>TERMINATED AT 0.90 m  |                           |                                    |                                   |
|             |                       |                          |                      |  | - 1.0                   |                         |                | Target depth   |                           |                                    |                                   |
|             |                       |                          |                      |  | Ē                       |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | ŀ                       |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | -                       |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | - 1.5                   |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | -                       |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | -                       |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | - 20                    |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | - 2.0                   |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | -                       |                         |                |  |                           |                                    |                                   |
| 3           |                       |                          |                      |  | -                       |                         |                |  |                           |                                    |                                   |
| 2           |                       |                          |                      |  | - 25                    |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | - 2.0                   |                         |                |  |                           |                                    |                                   |
| ŝ           |                       |                          |                      |  | -                       |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | -                       |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | -3.0                    |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | - 0.0                   |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | -                       |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | F                       |                         |                |  |                           |                                    |                                   |
| :           |                       |                          |                      |  | -3.5                    |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | -                       |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | F                       |                         |                |  |                           |                                    |                                   |
| j           |                       |                          |                      |  | Ĺ                       |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | -4.0                    |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | ŀ                       |                         |                |  |                           |                                    |                                   |
| 2           |                       |                          |                      |  | Ę                       |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | Ę                       |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | -4.5                    |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | ŀ                       |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | Ĺ                       |                         |                |  |                           |                                    |                                   |
|             |                       |                          |                      |  | ŀ                       |                         |                |  |                           |                                    |                                   |
| ME          | THO                   | <br>D                    |                      | PENETRA  |                         | 1                       | F              | IELD TESTS SAMPLES   | 1                         | 1                                  | SOIL CONSISTENCY                  |
| EX<br>R     | C E                   | Excavato<br>Ripper       | r bucke              | VE Very  | Easy (No Resista        | nce)                    | S L            | PT - Standard Penetration Test B - Bul   | lk disturbe<br>sturbed sa | ed sample<br>Imple                 | VS - Very Soft<br>S - Soft        |
| HA<br>PT    | ∖ ⊢<br>F              | land aug<br>Push tube    | er                   | F Firm<br>H Hard   |                         |                         |                | CP - Dynamic Cone Penetrometer U - Thi   | vironment<br>in wall tub  | al sample<br>e 'undistu            | e F - Firm<br>Irbed' St - Stiff   |
| SC<br>AH    | DN S                  | Sonic dril<br>Nir hamm   | ing<br>er            | VH Very  | Hard (Refusal)          |                         |                | SP - Perth Sand Penetrometer<br>IC - Moisture Content MOISTURE   |                           |                                    | VSt - Very Stiff<br>H - Hard      |
| PS<br>AS    | F<br>S                | Percussio<br>Short spir  | n sam<br>al aug      | pler WATER   | /ater Level on          | Date                    | F<br>I         | BT - Plate Bearing Test D - Dry  | /<br>vist                 |                                    | RELATIVE DENSITY                  |
|             | )/V S<br>)/T S        | olid fligh               | t augé<br>t auge     | r: V-Bit   | hown<br>ater inflow     |                         | F              | ID - Photoionisation Detector W - We   | et<br>astic limit         |                                    | VL - Very Loose<br>L - Loose      |
| i HF<br>WE  | A F<br>B V            | Iollow flig<br>Vashbor   | pht aug<br>e drillin | g w  | ater outflow            |                         | '              | S - Vane Snear; P=Peak, LL - Liq<br>R=Resdual (uncorrected kPa) w - Mo   | uid limit                 | ntent                              | MD - Medium Dense<br>D - Dense    |
|             | < F                   | KOCK TOILE               | er.                  |  |                         |                         |                |  |                           |                                    | vD - very Dense                   |
| Rei<br>abb  | fer to e<br>previatio | xplanatory<br>ons and ba | notes for a sis of d | or details of<br>escriptions                               |                         | CAR                     | D              | NO (NSW/ACT) PTY LTD   |                           |                                    |                                   |

| $\boldsymbol{\leq}$ | $\square$              | <b>C</b>                            | arc                          | lno°                               |                      |                |                |  |                         | TE                                 | ST PIT LOG SHEET                            |
|---------------------|------------------------|-------------------------------------|------------------------------|------------------------------------|----------------------|----------------|----------------|--|-------------------------|------------------------------------|---|
| Clie                | ent:<br>oject:         | l                                   | DWP<br>Detai                 | Australia<br>led Site Investigatio | n and Ge             | otechn         | ical           | Investigation  |                         | ŀ                                  | Hole No: TP05                               |
| Loc                 | ation                  | n: l<br>n: See                      | (yee<br>atta                 | magh Infants Schoo<br>ched plan    | l, Kyeema            | agh, NS        | SW             | Job No: 5017190157   |                         | Surfac                             | Sheet: 1 of 1<br>e Elevation:               |
| Ma                  | chine                  | e Type                              | e: 10                        | tonne Excavator                    |                      |                |                | Excavation Method:   |                         | oundo                              |   |
| Exc                 | cavat                  | ion D                               | imer                         | sions:                             |                      |                |                |  |                         | Contra                             | ctor:                                       |
| Dat                 | e Ex                   | cavat                               | ed: 1                        | 0/11/18                            |                      |                |                | Logged By: JG  |                         | Checke                             | ed By:                                      |
|                     | xcava                  | tion                                |                              | Sampling & Testing                 |                      |                | _              | Material Description   |                         |                                    |   |
| Method              | Resistance             | Stability                           | Water                        | Sample or<br>Field Test            | Depth (m             | Graphic<br>Log | Classification | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure | Moisture<br>Condition   | Consistency<br>Relative<br>Density | STRUCTURE<br>& Other Observations           |
|                     |                        |                                     |                              | ES 0.10 m<br>TP05_0_1              |                      |                |                | 0.10m FILL: Silty SAND: fine to medium grained, uniform,   | D                       |                                    | FILL<br>0.00 m: PID = 3.7ppm                |
|                     |                        |                                     |                              |                                    |                      |                |                | SAND: fine to medium grained, uniform, white   |                         |                                    | MARINE<br>0.10 m; PID = 0.8ppm              |
|                     |                        |                                     |                              |                                    | F                    |                |                | yenow grey   |                         |                                    |   |
| Ľ.                  |                        |                                     |                              |                                    | - 0.5                |                |                |  | м                       | F                                  | -   |
|                     |                        |                                     |                              |                                    | -                    |                |                |  |                         |                                    |   |
|                     |                        |                                     |                              | ES 0.90 m                          | -                    |                |                |  |                         |                                    |   |
| L V                 |                        | -                                   |                              | TP05_0.9                           |                      |                |                | 0.90m  |                         |                                    |   |
|                     |                        |                                     |                              |                                    | - 1.0                |                |                | Target depth   |                         |                                    | -   |
|                     |                        |                                     |                              |                                    | -                    |                |                |  |                         |                                    |   |
|                     |                        |                                     |                              |                                    | -                    |                |                |  |                         |                                    |   |
|                     |                        |                                     |                              |                                    | -                    |                |                |  |                         |                                    |   |
|                     |                        |                                     |                              |                                    | -                    |                |                |  |                         |                                    |   |
|                     |                        |                                     |                              |                                    | -                    |                |                |  |                         |                                    |   |
|                     |                        |                                     |                              |                                    | -                    |                |                |  |                         |                                    |   |
|                     |                        |                                     |                              |                                    | - 2.0                |                |                |  |                         |                                    | -   |
|                     |                        |                                     |                              |                                    | F                    |                |                |  |                         |                                    |   |
| <i>(</i> 0          |                        |                                     |                              |                                    | Ē                    |                |                |  |                         |                                    |   |
| g Tool              |                        |                                     |                              |                                    | -                    |                |                |  |                         |                                    |   |
| nitorin             |                        |                                     |                              |                                    | - 2.5                |                |                |  |                         |                                    | -   |
| to, Mo              |                        |                                     |                              |                                    | -                    |                |                |  |                         |                                    |   |
| A, Pho              |                        |                                     |                              |                                    | -                    |                |                |  |                         |                                    |   |
| SSRT                |                        |                                     |                              |                                    | - 3.0                |                |                |  |                         |                                    |   |
| tgel AC             |                        |                                     |                              |                                    | -                    |                |                |  |                         |                                    |   |
| 00 Da               |                        |                                     |                              |                                    | È                    |                |                |  |                         |                                    |   |
| 10.0.0              |                        |                                     |                              |                                    | ŀ                    |                |                |  |                         |                                    |   |
| 16:17               |                        |                                     |                              |                                    | - 3.5                |                |                |  |                         |                                    | -   |
| 2018                |                        |                                     |                              |                                    | ļ                    |                |                |  |                         |                                    |   |
| 03/12/              |                        |                                     |                              |                                    | F                    |                |                |  |                         |                                    |   |
| <u> </u>            |                        |                                     |                              |                                    |                      |                |                |  |                         |                                    |   |
| awingf              |                        |                                     |                              |                                    | -4.0                 |                |                |  |                         |                                    |   |
| ų<br>Š              |                        |                                     |                              |                                    | F                    |                |                |  |                         |                                    |   |
| S.GPJ               |                        |                                     |                              |                                    | ļ                    |                |                |  |                         |                                    |   |
| LOG                 |                        |                                     |                              |                                    | -4.5                 |                |                |  |                         |                                    | -   |
| HOLE                |                        |                                     |                              |                                    | L                    |                |                |  |                         |                                    |   |
| BOR                 |                        |                                     |                              |                                    | F                    |                |                |  |                         |                                    |   |
| MAGF                |                        |                                     |                              |                                    | F                    |                |                |  |                         |                                    |   |
| M K                 |                        | )                                   |                              | PENETRAT                           | ION                  |                | F              | IELD TESTS SAMPLES   |                         |                                    |   |
|                     | х Е<br>R               | xcavato<br>ipper<br>and aur         | i DUCKe<br>ier               | UE VEry E<br>E Easy                | asy (No Resista      | ince)          |                | IP - Hand/Pocket Penetrometer D - Dis<br>FS - Environmeter FS - Environmeter   | turbed sa               | eu sample<br>Imple<br>tal sample   | s vo - very Sott<br>S - Soft<br>F - Firm    |
|                     | DN S                   | ush tub<br>onic dril                | e<br>ling                    | ⊢ Firm<br>H Hard<br>VH Verv H      | ard (Refusal)        |                |                | OCP - Dynamic Cone Penetrometer     U - Thi       'SP - Perth Sand Penetrometer     U - Thi  | n wall tub              | e 'undistu                         | rbed' St - Stiff<br>VSt - Verv Stiff        |
|                     | HĂ<br>SP               | ir hamm<br>ercussio                 | er<br>on sam                 | pler WATER                         | (                    |                | N<br>P         | MC - Moisture Content MOISTURE   | ,                       |                                    | H - Hard                                    |
| AS AS               | s s<br>p/v s           | hort spi<br>olid fligh              | al aug<br>t auge             | er<br>r: V-Bit                     | ater Level on<br>own | Date           |                | MP - Borehole Impression Test M - Mo<br>ID - Photoionisation Detector W - We   | ist<br>et               |                                    | VL - Very Loose                             |
| 의 AE                | ノバ S<br>FA H<br>B い    | olid fligh<br>ollow flig<br>/asbbor | t auge<br>ght aug<br>drillin | jer wa                             | ter inflow           |                | 1              | /S - Vane Shear; P=Peak,<br>PL - Pla<br>LL - Liq   | stic limit<br>uid limit |                                    | L - Loose<br>MD - Medium Dense<br>D - Dense |
|                     | R                      | ock rolle                           | er                           | ⊎ wa                               |                      |                |                |  | isture cor              | ntent                              | VD - Very Dense                             |
| VON Re<br>ab        | fer to ex<br>breviatio | planatory                           | notes f<br>asis of d         | or details of<br>escriptions       |                      | CAR            |                | NO (NSW/ACT) PTY LTD   |                         |                                    |   |
|                     |                        |                                     |                              |                                    |                      |                |                | · /  |                         |                                    |   |

|  |                | ) Ci                            | arc               | dno                        |                                |                  |                         |                |  |                                       | TE                                 | ST PIT LOG SHEET                     |
|--|----------------|---------------------------------|-------------------|----------------------------|--------------------------------|------------------|-------------------------|----------------|--|---------------------------------------|------------------------------------|--------------------------------------|
| Clie<br>Pro  | ent:<br>oject: | ן<br>ניין                       | DWP<br>Detai      | Australia<br>led Site Inve | stigation an                   | nd Ge            | otechn                  | ical           | Investigation  |                                       | ŀ                                  | Hole No: TP06                        |
| Loc  | atio           | n: I                            | (yee              | magh Infants               | s School, Ky                   | /eema            | agh, NS                 | SW             | Job No: 5017190157   |                                       | D                                  | Sheet: 1 of 1                        |
| Ma   | ching          | n: See<br>a Type                | atta<br>2. 10     | tonne Excav                | ator                           |                  |                         |                | Excavation Method:   |                                       | Surrac                             | e Elevation:                         |
| Exc  | cavat          | tion D                          | imer              | nsions:                    |                                |                  |                         |                |  | (                                     | Contra                             | ctor:                                |
| Dat  | e Ex           | cavat                           | ed: 1             | 0/11/18                    |                                |                  |                         |                | Logged By: JG  |                                       | Checke                             | ed By:                               |
| E  | xcava          | ition                           |                   | Sampling                   | & Testing                      |                  |                         |                | Material Descrip   | tion                                  |                                    |                                      |
| Method   | Resistance     | Stability                       | Water             | Samp<br>Field              | ble or<br>Test                 | Depth (m)        | Graphic<br>Log          | Classification | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure | Moisture<br>Condition                 | Consistency<br>Relative<br>Density | STRUCTURE<br>& Other Observations    |
|  |                |                                 |                   | ES 0.10 m<br>TP06_0 1      |                                |                  | لد علد علد<br>علد علد ع |                | 0.10m Gravelly SAND: fine grained, poorly graded,  | , _ D _                               |                                    | TOPSOIL                              |
|  |                |                                 |                   | ES 0.30 m<br>TP06_0_3      |                                | $\left  \right $ |                         |                | FILL: GRAVEL: medium, poorly graded, black   | /                                     |                                    | FILL<br>0.10 m: PID = 3.400m         |
|  |                |                                 |                   |                            |                                | ł                | ×××××                   |                | SAND: fine to medium grained, uniform, yellow  |                                       |                                    |                                      |
|  |                |                                 |                   |                            |                                | -0.5             |                         |                | brown  |                                       |                                    |                                      |
|  |                |                                 |                   |                            |                                | -                |                         |                |  | м                                     | F                                  |                                      |
|  |                |                                 |                   |                            |                                | -                |                         |                | 0.80m  |                                       |                                    |                                      |
|  |                | ]                               |                   |                            |                                | -                |                         |                | TERMINATED AT 0.80 m<br>Target depth   |                                       |                                    |                                      |
|  |                |                                 |                   |                            |                                | - 1.0            |                         |                |  |                                       |                                    | -                                    |
|  |                |                                 |                   |                            |                                | Ľ                |                         |                |  |                                       |                                    |                                      |
|  |                |                                 |                   |                            |                                | -                |                         |                |  |                                       |                                    |                                      |
|  |                |                                 |                   |                            |                                | F                |                         |                |  |                                       |                                    |                                      |
|  |                |                                 |                   |                            |                                | - 1.5            |                         |                |  |                                       |                                    | -                                    |
|  |                |                                 |                   |                            |                                | -                |                         |                |  |                                       |                                    |                                      |
|  |                |                                 |                   |                            |                                | -                |                         |                |  |                                       |                                    |                                      |
|  |                |                                 |                   |                            |                                | 20               |                         |                |  |                                       |                                    | -                                    |
|  |                |                                 |                   |                            |                                | - 2.0            |                         |                |  |                                       |                                    |                                      |
|  |                |                                 |                   |                            |                                | -                |                         |                |  |                                       |                                    |                                      |
| 0018   |                |                                 |                   |                            |                                | ļ                |                         |                |  |                                       |                                    |                                      |
| oring  |                |                                 |                   |                            |                                | -2.5             |                         |                |  |                                       |                                    | -                                    |
| Mont   |                |                                 |                   |                            |                                | -                |                         |                |  |                                       |                                    |                                      |
| hoto,  |                |                                 |                   |                            |                                | [                |                         |                |  |                                       |                                    |                                      |
| KIA,   |                |                                 |                   |                            |                                | -                |                         |                |  |                                       |                                    |                                      |
| AGS  |                |                                 |                   |                            |                                | - 3.0            |                         |                |  |                                       |                                    | -                                    |
| Jatge  |                |                                 |                   |                            |                                | Ę                |                         |                |  |                                       |                                    |                                      |
| 000.0  |                |                                 |                   |                            |                                | ╞                |                         |                |  |                                       |                                    |                                      |
| YOL /  |                |                                 |                   |                            |                                | -                |                         |                |  |                                       |                                    |                                      |
| 1.01.0   |                |                                 |                   |                            |                                | - 3.5            |                         |                |  |                                       |                                    |                                      |
| 102/2  |                |                                 |                   |                            |                                | $\vdash$         |                         |                |  |                                       |                                    |                                      |
| 03/1   |                |                                 |                   |                            |                                | E                |                         |                |  |                                       |                                    |                                      |
| grile>   |                |                                 |                   |                            |                                | -4.0             |                         |                |  |                                       |                                    | -                                    |
| rawing   |                |                                 |                   |                            |                                | $\vdash$         |                         |                |  |                                       |                                    |                                      |
| ~  |                |                                 |                   |                            |                                | Ĺ                |                         |                |  |                                       |                                    |                                      |
| 20.02  |                |                                 |                   |                            |                                | ŀ                |                         |                |  |                                       |                                    |                                      |
| ECC  |                |                                 |                   |                            |                                | -4.5             |                         |                |  |                                       |                                    | -                                    |
| EHOL   |                |                                 |                   |                            |                                | Ĺ                |                         |                |  |                                       |                                    |                                      |
| BOR  |                |                                 |                   |                            |                                | ŀ                |                         |                |  |                                       |                                    |                                      |
| MAGF   |                |                                 |                   |                            |                                | F                |                         |                |  |                                       |                                    |                                      |
| ME   | ЕТНО           | 2                               |                   | P                          | ENETRATION                     |                  |                         | F              | IELD TESTS SAMPI   | LES                                   |                                    | SOIL CONSISTENCY                     |
|  |                | xcavato<br>lipper               | r buck            | et V                       | E Very Easy (N<br>Easy         | o Resista        | ince)                   | S<br>  н       | IP - Hand/Pocket Penetrometer D -  | Bulk disturbe<br>Disturbed sa         | d sample<br>mple                   | VS - Very Soft<br>S - Soft<br>E Eirm |
|  | N P            | ana aug<br>ush tubi<br>onic dri | ier<br>e<br>lina  | F                          | Firm<br>Hard<br>H Very Hord (P | ofueol)          |                         | D<br>  P       | DCP - Dynamic Cone Penetrometer     ES -       USP - Perth Sand Penetrometer     U -   | Environment<br>Thin wall tub          | ai sample<br>e 'undistu            | rbed' St - Stiff<br>VSt - Very Stiff |
|  |                | ir hamm<br>ercussid             | er<br>on sam      | npler <b>V</b>             | VATER                          | cruadí)          |                         | N              | MC - Moisture Content MOIST  | URE                                   |                                    | H - Hard                             |
|  | s s<br>D/V s   | hort spir                       | al aug            | er<br>er: V-Bit            | Water L                        | evel on          | Date                    |                | MP - Borehole Impression Test M -  | Dry<br>Moist                          |                                    | RELATIVE DENSITY<br>VL - Very Loose  |
| AC<br>B HF   | D/T S          | olid fligh                      | t auge<br>ght aug | er: TC-Bit<br>ger          | water inf                      | low              |                         |                | 'ID     -     Photoionisation Detector     W     -       'S     -     Vane Shear; P=Peak,     PL     -   | vvet<br>Plastic limit<br>Liquid limit |                                    | L - Loose<br>MD - Medium Dense       |
| BID:<br>BID:<br>BID:<br>BID:<br>BID:<br>BID:<br>BID:<br>BID: | R R            | vashbor<br>lock rolle           | e drillir<br>er   | ng                         | water ou                       | ittiow           |                         |                | R=Resdual (uncorrected kPa)  | Moisture cor                          | tent                               | D - Dense<br>VD - Very Dense         |
| N Re   | fer to e       | kplanatory                      | notes f           | or details of              |                                |                  |                         | אחי            |  |                                       |                                    | <u> </u>                             |
| abt  | breviatio      | ons and ba                      | asis of d         | lescriptions               |                                |                  | CAR                     | יוט            | NO (NOW/ACI) PIT LID   |                                       |                                    |                                      |

|   | D  |   | arc  | dno'  |   |                                    |                         |                                 |   |  | TE                                   | ST PIT LOG SHEET   |
|---|--|---|--|---|---|------------------------------------|-------------------------|---------------------------------|---|--|--------------------------------------|--|
| Clie<br>Pro<br>Loc                                | ent:<br>ject:<br>atio                              | l<br>I<br>n: I  | OWP<br>Detai<br>Kyee   | Australia<br>led Site I<br>magh Infa            | n<br>nvestigation a<br>ants School, K   | nd Ge<br>lyeema                    | otechn<br>agh, N        | ical<br>SW                      | Investigation<br>Job No: 5017190157   |  | ł                                    | Hole No: TP07<br>Sheet: 1 of 1   |
| Pos   | itior  | n: See  | atta   | ched plar                                       | <u>,</u><br>ו   | -                                  | •                       |                                 | Angle from Horizontal: 90°  | ;  | Surfac                               | e Elevation:   |
| Mad   | chine  | э Туре  | e: 10  | tonne Ex  | cavator   |                                    |                         |                                 | Excavation Method:  |  |                                      |  |
| Exc   | avat   | ion D   | imer   | sions:  |   |                                    |                         |                                 |   |  | Contra                               | ctor:  |
| Dat   | e Ex   | cavat   | ed: 1  | 0/11/18   |   | -                                  |                         |                                 | Logged By: JG   |  | Checke                               | ed By:   |
| E)  | cava   | tion  |  | Samp  | ling & Testing  | -                                  |                         |                                 | Material Description  |  | 1                                    |  |
| Method  | Resistance   | Stability   | Water  | S   | ample or<br>ield Test   | Depth (m                           | Graphic<br>Log          | Classification                  | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure  | Moisture<br>Condition  | Consistency<br>Relative<br>Density   | STRUCTURE<br>& Other Observations  |
| A   |  |   |  | ES 0.10 m                                       |   |                                    | لد علد علد<br>علد علد ع |                                 | 0.10m Silty SAND: fine to medium grained, poorly  |  |                                      | TOPSOIL<br>0.00 m; PID = 4.2 ppm   |
|   |  |   |  | ES 0.40 m<br>TP07_0.4                           |   | -                                  |                         | <                               | FILL: Silty SAND: fine to medium grained, uniform, brown  | D  |                                      | FILL   |
|   |  |   |  | ES 0.60 m<br>TP07 0.6                           |   | -0.5                               |                         |                                 | 0.40m<br>FILL: Gravelly SAND: fine to medium grained, gap<br>graded, brown yellow, medium to coarse grained   |  |                                      | 0.40 m: PID = 1.3 ppm  |
|   |  |   |  |   |   |                                    |                         |                                 | SAND: fine to medium grained, uniform, yellow brown   | м  | F                                    |  |
| <b>*</b>  |  | -   |  |   |   | -                                  | <u> 1999</u><br>        |                                 | 1.10m<br>TERMINATED AT 1.10 m<br>Target depth   |  |                                      |  |
|   |  |   |  |   |   | -                                  |                         |                                 |   |  |                                      |  |
|   |  |   |  |   |   | - 1.5<br>-                         |                         |                                 |   |  |                                      |  |
|   |  |   |  |   |   | -                                  |                         |                                 |   |  |                                      |  |
|   |  |   |  |   |   | -2.0                               |                         |                                 |   |  |                                      |  |
|   |  |   |  |   |   | -                                  |                         |                                 |   |  |                                      |  |
|   |  |   |  |   |   | -<br>2.5                           |                         |                                 |   |  |                                      |  |
|   |  |   |  |   |   | -                                  |                         |                                 |   |  |                                      |  |
|   |  |   |  |   |   |                                    |                         |                                 |   |  |                                      |  |
|   |  |   |  |   |   | -                                  |                         |                                 |   |  |                                      |  |
|   |  |   |  |   |   | -<br>3.5                           |                         |                                 |   |  |                                      |  |
|   |  |   |  |   |   | -                                  |                         |                                 |   |  |                                      |  |
|   |  |   |  |   |   |                                    |                         |                                 |   |  |                                      |  |
|   |  |   |  |   |   | - 4.0                              |                         |                                 |   |  |                                      |  |
|   |  |   |  |   |   | -                                  |                         |                                 |   |  |                                      |  |
|   |  |   |  |   |   | -4.5<br>-                          |                         |                                 |   |  |                                      |  |
|   |  |   |  |   |   | -                                  |                         |                                 |   |  |                                      |  |
| ME<br>EX<br>R<br>HA<br>PT<br>SC<br>AH<br>PS<br>AD | ETHOL<br>E<br>R<br>H<br>N<br>S<br>V<br>S<br>V<br>S | C<br>xcavato<br>ipper<br>and aug<br>ush tube<br>onic dril<br>ir hamm<br>ercussic<br>hort spin<br>olid fligh<br>olid fligh | r bucke<br>jer<br>er<br>on sam<br>al aug<br>t auge<br>t auge | l<br>pler<br>er<br>r: V-Bit<br>r: TC-Bit<br>ver | PENETRATION<br>VE Very Easy (F<br>E Easy<br>F Firm<br>H Hard<br>VH Very Hard (I<br>WATER<br>Water I<br>water ir<br>water ir | No Resista<br>Refusal)<br>Level on | I ance)<br>Date         | F<br>S<br>H<br>D<br>P<br>M<br>P | Image: Solution of the system     Image: Solution of the system     Image: Solution of the system       Image: Solution of the system     Image: Solution of the system     Image: Solution of the system       Image: Solution of the system     Image: Solution of the system     Image: Solution of the system       Image: Solution of the system     Image: Solution of the system     Image: Solution of the system       Image: Solution of the system     Image: Solution of the system     Image: Solution of the system       Image: Solution of the system     Image: Solution of the system     Image: Solution of the system       Image: Solution of the system     Image: Solution of the system     Image: Solution of the system       Image: Solution of the system     Image: Solution of the system     Image: Solution of the system       Image: Solution of the system     Image: Solution of the system     Image: Solution of the system       Image: Solution of the system     Image: Solution of the system     Image: Solution of the system       Image: Solution of the system     Image: Solution of the system     Image: Solution of the system       Image: Solution of the system     Image: Solution of the system     Image: Solution of the system       Image: Solution of the system     Image: Solution of the system     Image: Solution of the system       Image: Solution of the system     Image: Solution of the system     Image: Solution of the system       Image: Soluti | k disturbe<br>turbed sa<br>vironment<br>n wall tub<br>st<br>t<br>stc limit | l<br>mple<br>al sample<br>e 'undistu | SOIL CONSISTENCY<br>VS - Very Soft<br>S - Soft<br>F - Firm<br>VSt - Stiff<br>VSt - Very Siff<br>H - Hard<br>RELATIVE DENSITY<br>VL - Very Loose<br>L - Loose<br>MD - Mordium Dense |
| RF<br>RF  | B W<br>R R   | /ashbor<br>ock rolle  | e drillin<br>er  | or details of                                   | — d water o   | utflow                             |                         |                                 |   | ud limit<br>isture cor   | itent                                | D Dense<br>VD Very Dense   |
| abb   | reviatio   | ns and ba   | asis of d  | escriptions                                     |   |                                    | OAR                     | יוט                             |   |  |                                      |  |

|          |               | ) C                       | arc                 | dno <sup>°</sup>        |                           |            |                              |               |            |   |  |                         | ΤЕ                                 | ST PIT LOG SHEET                  |
|----------|---------------|---------------------------|---------------------|-------------------------|---------------------------|------------|------------------------------|---------------|------------|---|--|-------------------------|------------------------------------|-----------------------------------|
| Cli      | ent:          |                           | DWP<br>Detai        | Australia               | N<br>Nestigation a        | nd Ge      | otechn                       | ical          | l Inv      | restigation   |  |                         | ł                                  | Hole No: TP08                     |
| Lo       | catio         | n:                        | Kyee                | magh Infa               | ants School, K            | yeem       | agh, NS                      | SW            |            | Job No: 5017190157  |  |                         |                                    | Sheet: 1 of 1                     |
| Po       | sitio         | n: See                    | atta                | ched plar               | ı                         |            |                              |               |            | Angle from Horizontal   | : 90°  |                         | Surfac                             | e Elevation:                      |
| Ma       | chin          | e Typ                     | e: 10               | tonne Ex                | cavator                   |            |                              |               |            | Excavation Method:  |  |                         | Contro                             | otori                             |
|          | te Ex         | cavat                     | ed: 1               | 0/11/18                 |                           |            |                              |               |            | Logged By: JG   |  |                         | Check                              | ed Bv:                            |
| E        | xcava         | ation                     |                     | Samp                    | ling & Testing            |            |                              |               |            | Materia   | al Description                               |                         |                                    |                                   |
|          |               |                           |                     |                         | 0 0                       | Ē          |                              | E             |            |   |  |                         |                                    |                                   |
| Method   | Resistance    | Stability                 | Water               | S                       | ample or<br>ield Test     | Depth (I   | Graphic<br>Log               | Classificatic |            | SOIL TYPE, plasticity or particle cha<br>colour, secondary and minor com<br>ROCK TYPE, grain size and type,<br>fabric & texture, strength, weath<br>defects and structure | racteristic,<br>ponents<br>colour,<br>ering, | Moisture<br>Condition   | Consistency<br>Relative<br>Density | STRUCTURE<br>& Other Observations |
|          |               |                           |                     | ES 0.10 m<br>TP08 0.1   |                           |            | لىر خاند خاند<br>خاند خاند خ | L -           | 0.10       | Silty SAND: fine to medium grained,   | gap graded,                                  |                         |                                    | TOPSOIL<br>0.00 m: PID = 2.9ppm   |
|          |               |                           |                     | ES 0.40 m<br>TP08 0.4   |                           | -          |                              |               |            | FILL: SAND: fine to medium grained  | /<br>I, uniform,                             |                         |                                    | FILL<br>0.10 m: PID = 4.0ppm      |
|          |               |                           |                     | _                       |                           | <u>t</u>   |                              | <u> </u>      | 0.40       | Dm  |  |                         |                                    |                                   |
| Ш<br>Ш   |               |                           |                     |                         |                           | - 0.5      |                              |               |            | SAND: fine to medium grained, unife<br>brown  | orm, yellow                                  |                         |                                    | MARINE -                          |
|          |               |                           |                     |                         |                           | F          |                              |               |            |   |  | м                       | F                                  |                                   |
|          |               |                           |                     |                         |                           | Ę          |                              |               |            |   |  |                         |                                    |                                   |
| L V      |               | -                         |                     |                         |                           | -          | 10000                        |               | 0.90       | TERMINATED AT 0.90 m  |  |                         |                                    |                                   |
|          |               |                           |                     |                         |                           | - 1.0      |                              |               |            | Target depth  |  |                         |                                    | -                                 |
|          |               |                           |                     |                         |                           | F          |                              |               |            |   |  |                         |                                    |                                   |
|          |               |                           |                     |                         |                           | -          |                              |               |            |   |  |                         |                                    |                                   |
|          |               |                           |                     |                         |                           | -1.5       |                              |               |            |   |  |                         |                                    | _                                 |
|          |               |                           |                     |                         |                           | -          |                              |               |            |   |  |                         |                                    |                                   |
|          |               |                           |                     |                         |                           | ł          |                              |               |            |   |  |                         |                                    |                                   |
|          |               |                           |                     |                         |                           | Ē.         |                              |               |            |   |  |                         |                                    |                                   |
|          |               |                           |                     |                         |                           | - 2.0      |                              |               |            |   |  |                         |                                    | -                                 |
|          |               |                           |                     |                         |                           | -          |                              |               |            |   |  |                         |                                    |                                   |
| <i>w</i> |               |                           |                     |                         |                           | F          |                              |               |            |   |  |                         |                                    |                                   |
| 1001     |               |                           |                     |                         |                           | ŀ          |                              |               |            |   |  |                         |                                    |                                   |
| nitorin  |               |                           |                     |                         |                           | -2.5       |                              |               |            |   |  |                         |                                    | -                                 |
| 0        |               |                           |                     |                         |                           | -          |                              |               |            |   |  |                         |                                    |                                   |
| A LUO    |               |                           |                     |                         |                           | ł          |                              |               |            |   |  |                         |                                    |                                   |
| 222      |               |                           |                     |                         |                           | -3.0       |                              |               |            |   |  |                         |                                    | _                                 |
| gel Ac   |               |                           |                     |                         |                           | -          |                              |               |            |   |  |                         |                                    |                                   |
|          |               |                           |                     |                         |                           | -          |                              |               |            |   |  |                         |                                    |                                   |
| 0.0.0    |               |                           |                     |                         |                           | ļ.         |                              |               |            |   |  |                         |                                    |                                   |
|          |               |                           |                     |                         |                           | - 3.5      |                              |               |            |   |  |                         |                                    | -                                 |
| 81.0     |               |                           |                     |                         |                           | t          |                              |               |            |   |  |                         |                                    |                                   |
| 121.121  |               |                           |                     |                         |                           | Ļ          |                              |               |            |   |  |                         |                                    |                                   |
|          |               |                           |                     |                         |                           | ł          |                              |               |            |   |  |                         |                                    |                                   |
| MINGFIL  |               |                           |                     |                         |                           | -4.0       |                              |               |            |   |  |                         |                                    | -                                 |
| Sel ray  |               |                           |                     |                         |                           | +          |                              |               |            |   |  |                         |                                    |                                   |
| 29       |               |                           |                     |                         |                           | ł          |                              |               |            |   |  |                         |                                    |                                   |
| 1000     |               |                           |                     |                         |                           | 4.5        |                              |               |            |   |  |                         |                                    | -                                 |
| 12       |               |                           |                     |                         |                           | +          |                              |               |            |   |  |                         |                                    |                                   |
| SURE     |               |                           |                     |                         |                           | Ľ          |                              |               |            |   |  |                         |                                    |                                   |
| AGH      |               |                           |                     |                         |                           | Ļ          |                              |               |            |   |  |                         |                                    |                                   |
| M        | ETHO          | D                         | <u> </u>            |                         | PENETRATION               |            | 1                            | F             | FIELD      | D TESTS   | SAMPLES                                      | 1                       | I                                  | SOIL CONSISTENCY                  |
|          | K E           | Excavato<br>Ripper        | r buck              | et                      | VE Very Easy (I<br>E Fasy | No Resista | ince)                        | S I           | SPT<br>HP  | <ul> <li>Standard Penetration Test</li> <li>Hand/Pocket Penetrometer</li> </ul>   | B - Bul<br>D - Dis                           | k disturbe<br>turbed sa | ed sample<br>mple                  | e VS - Very Soft<br>S - Soft      |
|          | А Н<br>Г. Г   | land aug<br>Push tub      | ger<br>e            |                         | F Firm<br>H Hard          |            |                              |               | DCP        | Dynamic Cone Penetrometer   | ES - En<br>U - Thi                           | vironment<br>n wall tub | al sample<br>e 'undistu            | F - Firm<br>Irbed' St - Stiff     |
|          | ON S          | Sonic dri<br>Air hamn     | ling<br>1er         |                         | VH Very Hard (I           | Refusal)   |                              |               | MC         | <ul> <li>Perm Sand Penetrometer</li> <li>Moisture Content</li> </ul>  | MOISTURE                                     |                         |                                    | VSt - Very Stiff<br>H - Hard      |
|          | 5 F<br>5 S    | Percussion<br>Short spi   | on sam<br>ral aug   | pler<br>er<br>r: \/_₽i+ | Water                     | Level on   | Date                         | P             | PBT<br>IMP | <ul><li>Plate Bearing Test</li><li>Borehole Impression Test</li></ul>   | D - Dry<br>M - Mo                            | /<br>ist                |                                    |                                   |
|          | D/T S<br>FA F | Solid fligh<br>Hollow fli | nt auge<br>aht auge | r: TC-Bit               | shown                     | nflow      |                              | P<br>  V      | PID<br>VS  | <ul> <li>Photoionisation Detector</li> <li>Vane Shear: P=Peak</li> </ul>  | W - We<br>PL - Pla                           | et<br>stic limit        |                                    | L - Loose<br>MD - Medium Dense    |
| W R      | 'B V<br>R F   | Vashbor<br>Rock roll      | e drillir<br>ər     | ig                      |                           | utflow     |                              |               |            | R=Resdual (uncorrected kPa)   | LL - Liq<br>w - Mo                           | uid limit<br>isture cor | itent                              | D - Dense<br>VD - Very Dense      |
|          | efer to e     | explanator                | / notes f           | or details of           |                           |            |                              |               |            |   |  |                         |                                    |                                   |
| at at    | breviati      | ons and b                 | asis of d           | escriptions             |                           |            | CAR                          | וחי           | NC         | INSWACT) PTY  | LID  |                         |                                    |                                   |

|  | $\left  \right\rangle$  | G  | arc   | ino  |   |   |   |   |   | TE   | ST PIT LOG SHEET  |
|--|---|--|---|--|---|---|---|---|---|--|---|
| Clie<br>Pro  | ent:<br>ject:<br>atior  | ם<br>ב<br>ח: א   | OWP<br>Detai<br>(vee  | Australia<br>led Site Investigation<br>magh Infants School                             | on and Ge<br>ol. Kveema   | otechn<br>agh. N  | ical<br>SW  | Investigation   |   | ŀ  | Hole No: TP09   |
| Pos  | ition   | : See  | atta  | ched plan  | , - <b>,</b>  | . <b></b>   |   | Angle from Horizontal: 90°  |   | Surfac                                       | e Elevation:  |
| Mac  | chine   | е Туре   | e: 10   | tonne Excavator  |   |   |   | Excavation Method:  |   |  |   |
| Exc  | avat  | ion D  | imen  | sions:   |   |   |   | Loggod Byr JC   |   | Contra                                       | ctor:   |
| E Dat  |   | tion   | eu. I   | Sampling & Testin  | na  |   |   | Logged By. JG<br>Material Description   |   | CHECK  | ей Бу.  |
|  |   |  |   |  | <u>وا</u>   |   | Ę   |   |   |  |   |
| Method   | Resistance  | Stability  | Water   | Sample or<br>Field Test  | Depth (r  | Graphic<br>Log  | Classificatio                                       | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure  | Moisture<br>Condition   | Consistency<br>Relative<br>Density           | STRUCTURE<br>& Other Observations   |
|  |   |  |   | ES 0.30 m<br>TP09_0.3  | -   | لد علد علد<br>علد علد ع<br>لد علد علد<br>علد علد ع<br>لد علد علد<br>علد علد ع | L<br>L  | Silty SAND: fine to medium grained, uniform, brown yellow   | D   |  | TOPSOIL<br>0.00 m: PID = 3.3ppm   |
| EX   |   |  |   | ES 0.80 m<br>TP09_0.8  | -<br>- 0.5<br>-   |   | · · · · · · · · · · · · · · · · · · ·               | 0.30m   | м   | F  | MARINE  |
| -  |   | 1  |   |  |   | <u>pas de</u>   | 1   | U.SUM<br>TERMINATED AT 0.80 m   | 1   |  |   |
|  |   |  |   |  | -1.0<br>-1.0<br>-1.5<br>-2.0<br>-2.5<br>-3.0<br>-3.0  |   |   | TERMINATED AT 0.80 m<br>Target depth  |   |  |   |
| 2  |   |  |   |  |   |   |   |   |   |  |   |
|  |   |  |   |  | -   |   |   |   |   |  |   |
|  |   |  |   |  | -<br>4.5<br>-<br>-  |   |   |   |   |  |   |
|  |   |  |   |  | -   |   |   |   |   |  | <u> </u>  |
| ME<br>EX<br>HAL<br>PTC<br>AD<br>AD<br>AD<br>AD<br>AD<br>AD<br>AD<br>AD<br>AD<br>AD<br>AD<br>AD<br>AD | ETHOL<br>E<br>Ri<br>DN SG<br>I Ai<br>SPE<br>SI<br>V/V SG<br>V/T SG<br>A Hi<br>B W<br>R<br>R | xcavato<br>ipper<br>and aug<br>ush tube<br>onic drill<br>r hamm<br>ercussic<br>hort spir<br>olid fligh<br>ollow flig<br>'ashbor<br>ock rolle | r bucke<br>er<br>er<br>on sam<br>al auge<br>t auge<br>ght auge<br>e drillin<br>er | at VE Very<br>E Easy<br>F Firm<br>H Hard<br>VH Very<br>F V-Bit<br>r: TV-Bit<br>g WATER | TION<br>Easy (No Resista<br>Hard (Refusal)<br>Vater Level on<br>hown<br>vater inflow<br>vater outflow | nce)<br>Date  | F<br>S<br>H<br>D<br>P<br>M<br>P<br>I<br>N<br>P<br>V | IELD TESTS       SAMPLES         PT - Standard Penetration Test       B - Bu         IP - Hand/Pocket Penetrometer       D - Dis         CP - Dynamic Cone Penetrometer       ES - En         SP - Perth Sand Penetrometer       U - Th         IC - Moisture Content       MOISTURE         BT - Plate Bearing Test       D - Dr         ID - Photoionisation Detector       W - Wc         'S - Vane Shear; P=Peak,       R=Resdual (uncorrected kPa) | Ik disturbed sa<br>vironment<br>in wall tube<br>isist<br>vist<br>et<br>istic limit<br>uid limit<br>isture con | ed sample<br>mple<br>al sample<br>e 'undistu | SOIL CONSISTENCY<br>VS - Very Soft<br>S - Soft<br>F - Firm<br>St - Stiff<br>VSt - Very Stiff<br>H - Hard<br>RELATIVE DENSITY<br>VL - Very Loose<br>L - Loose<br>MD - Medium Dense<br>D - Dense<br>VD - Very Dense |
| Ref<br>abb   | fer to ex<br>previatio  | planatory  | notes for a sis of d  | or details of<br>escriptions   |   | CAR   | <b>ND</b>   | NO (NSW/ACT) PTY LTD  |   |  |   |

|                                       | $\left  \right\rangle$   | Cá                                     | arc                          | <b>ino</b> °                               |                         |                 |                         |                |   |                                       |                       | TE                                 | ST PIT LOG   | SHEET             |
|---------------------------------------|--|--|------------------------------|--|-------------------------|-----------------|-------------------------|----------------|---|---------------------------------------|-----------------------|------------------------------------|--|-------------------|
| Clie<br>Pro                           | ent:<br>ject:<br>atio  | [<br>[<br>n:                           | OWP<br>Detai<br>Kyee         | Australia<br>led Site Inve<br>magh Infants | stigation ar            | nd Geo<br>veema | otechn<br>agh, NS       | ical<br>SW     | Investigation   |                                       |                       | ł                                  | Hole No:   | <b>TP10</b>       |
| Pos                                   | itior  | n: See                                 | atta                         | ched plan                                  |                         |                 | <b>J</b> /              |                | Angle from Horizontal:  | 90°                                   | 5                     | Surfac                             | e Elevation:   |                   |
| Mad                                   | chine  | э Туре                                 | e: 10                        | tonne Excav                                | /ator                   |                 |                         |                | Excavation Method:  |                                       |                       |                                    |  |                   |
| Exc                                   | avat   | ion D                                  | imer                         | isions:                                    |                         |                 |                         |                | Langed Day, 10  |                                       |                       | Contra                             | ctor:  |                   |
| Dat                                   |  | tion                                   |                              | 0/11/10<br>Sampling                        | 8 Tosting               |                 |                         |                | Logged by: JG   | Description                           |                       | Sneck                              | ей Бу:   |                   |
|                                       |  |  |                              | Sampling                                   | aresung                 |                 |                         | _              |   |                                       |                       |                                    |  |                   |
| Method                                | Resistance   | Stability                              | Water                        | Samı<br>Field                              | ole or<br>Test          | Depth (n        | Graphic<br>Log          | Classification | SOIL TYPE, plasticity or particle charac<br>colour, secondary and minor compo<br>ROCK TYPE, grain size and type, co<br>fabric & texture, strength, weather<br>defects and structure | cteristic,<br>nents<br>olour,<br>ing, | Moisture<br>Condition | Consistency<br>Relative<br>Density | STRUCTUR<br>& Other Observ   | RE<br>ations      |
|                                       |  |  |                              | ES 0.10 m<br>TP10 0 1                      |                         |                 | لد علد علد<br>علد علد ع |                | 0.10m Silty SAND: fine to medium grained, u   | niform,                               |                       |                                    | TOPSOIL<br>0.00 m: PID = 2.3ppm  |                   |
|                                       |  |  |                              | ES 0.40 m<br>TP10_0.4                      |                         | 1               |                         |                | FILL: SAND: fine to medium grained, u   |                                       | D                     |                                    | FILL<br>0 10 m: PID = 3 4ppm   |                   |
|                                       |  |  |                              |  |                         | F               |                         |                | 0.40m   |                                       |                       |                                    | or of the second s |                   |
| Ц                                     |  |  |                              |  |                         | -0.5            |                         |                | SAND: fine to medium grained, uniforr<br>brown  | n, yellow                             |                       |                                    | MARINE   |                   |
|                                       |  |  |                              |  |                         | -               |                         |                | 0.90m   |                                       | М                     | F                                  |  |                   |
|                                       |  |  |                              |  |                         | L10             | 111111                  |                | TERMINATED AT 0.90 m  |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | -               |                         |                | raigei deptri   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | F               |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | Ę               |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | - 1.5           |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | F               |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | Ę               |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | F               |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | -2.0            |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | F               |                         |                |   |                                       |                       |                                    |  |                   |
| e e e e e e e e e e e e e e e e e e e |  |  |                              |  |                         | F               |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | 25              |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | - 2.5           |                         |                |   |                                       |                       |                                    |  |                   |
| 500                                   |  |  |                              |  |                         | F               |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | Ĺ               |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | - 3.0           |                         |                |   |                                       |                       |                                    |  |                   |
| 5                                     |  |  |                              |  |                         | F               |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | Ĺ               |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | ŀ               |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | - 3.5           |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | [               |                         |                |   |                                       |                       |                                    |  |                   |
| i<br>i                                |  |  |                              |  |                         | F               |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | L.              |                         |                |   |                                       |                       |                                    |  |                   |
| p                                     |  |  |                              |  |                         | -4.0            |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | F               |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | t               |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | -4.5            |                         |                |   |                                       |                       |                                    |  |                   |
| 1                                     |  |  |                              |  |                         | F               |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | t               |                         |                |   |                                       |                       |                                    |  |                   |
|                                       |  |  |                              |  |                         | ŀ               |                         |                |   |                                       |                       |                                    |  |                   |
| ME                                    | i<br>Ethoi   | )<br>)                                 |                              | <br>  F                                    | PENETRATION             |                 | I                       | F              | ELD TESTS   | SAMPLES                               |                       | <u> </u>                           | SOIL CONS  | ISTENCY           |
| EX<br>R                               | ER   | xcavato<br>ipper                       | r buck                       | et v                                       | /E Very Easy (N<br>Easy | lo Resista      | nce)                    | S<br>S         | PT - Standard Penetration Test<br>P - Hand/Pocket Penetrometer  | B - Bulk o<br>D - Distur              | disturbe<br>rbed sa   | ed sample<br>mple                  | e VS - Ver<br>S - Sot  | ry Soft<br>ft     |
| HA<br>PT                              | H<br>P   | and aug<br>ush tube                    | er                           | F  | Firm<br>Hard            |                 |                         |                | CP - Dynamic Cone Penetrometer  | ES - Enviro<br>U - Thin v             | onmenta<br>wall tube  | al sample<br>e 'undistu            | F - Fin<br>Irbed' St - Stif  | m<br>ff           |
| SC<br>AH                              | N S  | onic dril<br>ir hamm                   | ing<br>er                    | V  | (H Very Hard (R         | efusal)         |                         |                | C - Moisture Content  | MOISTURE                              |                       |                                    | VSt - Ver<br>H - Ha  | ry Stiff<br>rd    |
| PS<br>AS                              | S Percussion sampler<br>S Short spiral auger<br>D/V Solid flight auger V/Bit |  |                              |  |                         |                 | Date                    | P              | BT - Plate Bearing Test<br>IP - Borehole Impression Test  | D - Dry<br>M - Moist                  |                       |                                    |  |                   |
|                                       | "v S<br>)/T S<br>≍A H  | olid fligh<br>olid fligh<br>ollow flig | t auge<br>t auge<br>aht auge | r: TC-Bit                                  | shown                   | flow            |                         | P<br>  V       | ID - Photoionisation Detector<br>S - Vane Shear: P=Peak   | W - Wet<br>PL - Plasti                | c limit               |                                    | L - Loo<br>MD - Me   | ose<br>dium Dense |
| WI                                    | 3 W<br>R   | ashbor                                 | e drillin<br>er              | ýg   | water ou                | utflow          |                         |                | R=Resdual (uncorrected kPa)   | LL - Liquid<br>w - Moist              | 1 limit<br>ure con    | tent                               | D - De<br>VD - Ver   | nse<br>ry Dense   |
| Ret                                   | fer to e   | planatory                              | notes f                      | or details of                              |                         |                 |                         | <u>ו</u>       |   |                                       |                       |                                    |  |                   |
| abb                                   | previatio  | ins and ba                             | isis of d                    | escriptions                                |                         |                 | CAR                     | U              | NO (NSW/ACT) PTY L  | טו                                    |                       |                                    |  |                   |

|   | $\square$  |                         | arc                  | no                                    |   |                              |  |   |  |   | TE  | ST PIT LOG SHEET  |
|---|--|-------------------------|----------------------|---------------------------------------|---|------------------------------|--|---|--|---|---|---|
| Clie<br>Pro<br>Loc  | ent:<br>ject:<br>atio  | ו<br>n: ו               | OWP<br>Detai<br>Kyee | Australia<br>led Site Ir<br>magh Infa | vestigation a<br>Ints School, K   | nd Ge<br>lyeem               | otechn<br>agh, N                                   | ical<br>SW  | Investigation<br>Job No: 5017190157  |   | ł   | Hole No: TP11<br>Sheet: 1 of 1  |
| Pos   | itior  | n: See                  | atta                 | ched plan                             | 1   | -                            |  |   | Angle from Horizontal: 90°   | ;   | Surfac  | e Elevation:  |
| Mac   | chine  | е Тур                   | e: 10                | tonne Ex                              | cavator   |                              |  |   | Excavation Method:   |   |   |   |
| EXC   | avat<br>e Fx   | cavat                   | Imen<br>ed: 1        | 0/11/18                               |   |                              |  |   | Logged By: JG  |   | Contra  | ed By:  |
| Ex  | cava   | ition                   |                      | Samp                                  | ina & Testina   |                              |  |   | Material Descrip   | tion  |   |   |
|   |  | 1                       |                      |                                       |   | Ē                            |  | Ę   | ······   |   |   |   |
| Method  | Resistance   | Stability               | Water                | S                                     | ample or<br>ield Test   | Depth (r                     | Graphic<br>Log                                     | Classificatio   | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure | Moisture<br>Condition   | Consistency<br>Relative<br>Density  | STRUCTURE<br>& Other Observations   |
| A   |  |                         |                      | ES 0.20 m<br>TP11_0.2                 |   | -                            | ند علد علد<br>علد علد ع<br>ند علد علد<br>علد علد ع |   | Silty SAND: fine to medium grained, uniform,<br>brown white<br>0.20m   | D   |   | TOPSOIL<br>0.00 m: PID = 2.0ppm   |
| EX  |  |                         |                      |                                       |   | - 0.5                        |  |   | SAND: fine to medium grained, uniform, yellow brown  |   | F   | MARINE  |
|   |  |                         |                      | ES 1.20 m<br>TP11_1.2                 |   | - 1.0                        |  |   | 1.20m  |   |   |   |
|   |  |                         |                      |                                       |   | Ł                            |  |   | Target depth   |   |   |   |
|   |  |                         |                      |                                       |   | - 1.5                        |  |   |  |   |   |   |
|   |  |                         |                      |                                       |   | -                            |  |   |  |   |   |   |
|   |  |                         |                      |                                       |   | - 2.0                        |  |   |  |   |   |   |
|   |  |                         |                      |                                       |   | -                            |  |   |  |   |   |   |
|   |  |                         |                      |                                       |   | F                            |  |   |  |   |   |   |
|   |  |                         |                      |                                       |   | -2.5                         |  |   |  |   |   |   |
|   |  |                         |                      |                                       |   | -                            |  |   |  |   |   |   |
|   |  |                         |                      |                                       |   | - 3.0                        |  |   |  |   |   |   |
|   |  |                         |                      |                                       |   | -                            |  |   |  |   |   |   |
|   |  |                         |                      |                                       |   | -35                          |  |   |  |   |   |   |
|   |  |                         |                      |                                       |   | -                            |  |   |  |   |   |   |
|   |  |                         |                      |                                       |   | -                            |  |   |  |   |   |   |
|   |  |                         |                      |                                       |   | 4.0<br>-                     |  |   |  |   |   |   |
|   |  |                         |                      |                                       |   | -                            |  |   |  |   |   |   |
|   |  |                         |                      |                                       |   | -4.5                         |  |   |  |   |   |   |
|   |  |                         |                      |                                       |   | -                            |  |   |  |   |   |   |
| MF  |  | <br>>                   |                      |                                       | PENETRATION   | F                            |  |   | IELD TESTS   | LES   |   |   |
| EX<br>R<br>HA<br>PT<br>SO<br>AH<br>PS   | ME I HOD     PENE I KA HON       EX     Excavator bucket     VE     Very Easy (No Res       R     Ripper     E Easy       IA     Hand auger     F Firm       7     Push tube     H Hard       SON     Sonic drilling     VH       VH     Air hammer     VH       VS     Percussion sampler     WATER |                         |                      |                                       | No Resista<br>Refusal)  | ance)                        | SH<br>DP<br>P                                      | PT     - Standard Penetration Test     B       IP     - Hand/Pocket Penetrometer     D       ICP     - Dynamic Cone Penetrometer     U       SP     - Perth Sand Penetrometer     U       IC     - Moisture Content     MOIST       BT     - Plate Bearing Test     D | Bulk disturbe<br>Disturbed sa<br>Environment<br>Thin wall tub<br><b>URE</b><br>Dry   | ed sample<br>imple<br>al sample<br>e 'undistu                 | vS         - Very Soft           S         - Soft           rbed'         F           St         - Stiff           VSt         - Very Stiff           H         - Hard           RELATIVE DENSITY |   |
| AS Short spiral auger<br>AD/V Solid flight auger: V-Bit<br>HFA Hollow flight auger<br>RR Rock roller<br>Water Level of<br>shown<br>Water Level of<br>shown<br>water inflow<br>water inflow<br>water outflow |  |                         |                      |                                       | Water in shown     water in water of water of the second sec | Levei on<br>nflow<br>outflow | Date   | P<br>V  | MP     -     Borehole Impression Test     M     -       ID     -     Photoionisation Detector     W     -       'S     -     Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa)     PL     -               | Moist<br>Wet<br>Plastic limit<br>Liquid limit<br>Moisture cor | ntent   | VL - Very Loose<br>L - Loose<br>MD - Medium Dense<br>D - Dense<br>VD - Very Dense |
| Ref<br>abb  | ier to ex<br>previatio   | xplanatory<br>ons and b | notes for asis of d  | or details of<br>escriptions          |   |                              | CAR  | D   | NO (NSW/ACT) PTY LTD   |   |   |   |

|               |                         | C                      | arc                   | lno                                   |                            |                |                   |               |   |   |                       | TE                                 | ST PIT LO                     | G SHEET   |
|---------------|-------------------------|------------------------|-----------------------|---------------------------------------|----------------------------|----------------|-------------------|---------------|---|---|-----------------------|------------------------------------|-------------------------------|---|
| Cli<br>Pro    | ent:<br>oject:<br>catio | ן<br>ו<br>ו:           | OWP<br>Detai<br>Kveel | Australia<br>led Site Ir<br>magh Infa | nvestigation a             | nd Ge<br>(veem | otechn<br>agh. NS | ical<br>SW    | Investigation   |   |                       | ŀ                                  | lole No                       | <b>TP12</b>                                     |
| Po            | sitior                  | : See                  | atta                  | ched plar                             | <u>ו</u>                   |                | <b>J</b> ,        |               | Angle from Horizontal:  | 90°                                       | 5                     | Surface                            | e Elevation:                  |   |
| Ma            | chine                   | э Тур                  | e: 10                 | tonne Ex                              | cavator                    |                |                   |               | Excavation Method:  |   |                       |                                    |                               |   |
| Ex            | cavat                   | ion D                  | imen<br>od: 1         | sions:<br>0/11/18                     |                            |                |                   |               | Logged By: IG   |   | (                     | Contra                             | ctor:                         |   |
| E             | ixcava                  | tion                   |                       | Samp                                  | ling & Testing             |                |                   |               | Material  | Description                               |                       | oncone                             | , a by:                       |   |
|               | ۵                       |                        |                       |                                       |                            | Ê              |                   | Б             |   |   |                       |                                    |                               |   |
| Method        | Resistance              | Stability              | Water                 | S                                     | ample or<br>ïeld Test      | Depth (        | Graphic<br>Log    | Classificatio | SOIL 1YPE, plasticity or particle chars<br>colour, secondary and minor compo<br>ROCK TYPE, grain size and type, c<br>fabric & texture, strength, weather<br>defects and structure   | acteristic,<br>onents<br>colour,<br>ring, | Moisture<br>Condition | Consistency<br>Relative<br>Density | STRU<br>& Other O             | CTURE<br>bservations                            |
|               |                         |                        |                       | ES 0.20 m<br>TP12_0.2, 0              | QA100, QA200               | -              |                   |               | FILL: SAND: fine to medium grained,<br>brown yellow<br>0.20m  | uniform,                                  |                       |                                    | FILL<br>0.00 m: PID = 2.2pp   |   |
|               |                         |                        |                       |                                       |                            | -              |                   |               | SAND: fine to medium grained, unifor brown  | rm, yellow                                |                       |                                    | MARINE<br>0.20 m: PID = 2.5pp | om -  |
|               |                         |                        |                       |                                       |                            | - 0.5          |                   |               |   |   | р                     |                                    |                               | -   |
| lΪ            |                         |                        |                       |                                       |                            | - 0.0          |                   | SP            |   |   | D                     | L                                  |                               | -   |
|               |                         |                        |                       | F0 4 00 m                             |                            |                |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       | ES 1.00 m<br>TP12_1.0                 |                            | F              |                   |               |   |   |                       |                                    |                               | -   |
|               |                         | 1                      |                       | _                                     |                            |                |                   |               | 1.00m<br>TERMINATED AT 1.00 m   |   |                       |                                    |                               |   |
|               |                         |                        |                       |                                       |                            | Ē              |                   |               | Target depth  |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | -              |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | - 1.5          |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | F              |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | È              |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | F              |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | - 2.0          |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | F              |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | È              |                   |               |   |   |                       |                                    |                               | -   |
| D             |                         |                        |                       |                                       |                            | -2.5           |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | F              |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | F              |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | +              |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | - 3.0          |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | -              |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | Ē              |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | - 3.5          |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            |                |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | -              |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | L_10           |                   |               |   |   |                       |                                    |                               | -   |
| 0             |                         |                        |                       |                                       |                            |                |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | t              |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | ŀ              |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | -4.5           |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | F              |                   |               |   |   |                       |                                    |                               | -   |
|               |                         |                        |                       |                                       |                            | -              |                   |               |   |   |                       |                                    |                               | -   |
|               | FTUO                    |                        |                       |                                       | DENETRATION                |                |                   |               |   |   |                       |                                    |                               |   |
| E             | X E                     | r<br>xcavato<br>inner  | r bucke               | ət                                    | VE Very Easy (             | No Resista     | ince)             |               | CPT - Standard Penetration Test   | B - Bulk                                  | disturbe              | d sample                           | VS                            | - Very Soft                                     |
| H.<br>P       | A H<br>T P              | and aug<br>ush tub     | jer<br>Ə              |                                       | E Easy<br>F Firm<br>H Hard |                |                   |               | Provide a construction of the construction of | ES - Envi<br>U - Thin                     | ronmenta<br>wall tube | al sample<br>a 'undistu            | rbed' St                      | - Firm<br>- Stiff                               |
| S             | ON S                    | onic dril<br>r hamm    | ling<br>er            |                                       | VH Very Hard (I            | Refusal)       |                   |               | PSP - Perth Sand Penetrometer<br>MC - Moisture Content  | MOISTURE                                  |                       |                                    | VSt<br>H                      | <ul><li>Very Stiff</li><li>Hard</li></ul>       |
| P:<br>A:      | S P<br>S S              | ercussion<br>hort spin | on sam<br>al auge     | pler<br>er<br>r: V-Bit                | WATER<br>Water             | Level on       | Date              | F<br>  II     | PBT - Plate Bearing Test<br>MP - Borehole Impression Test   | D - Dry<br>M - Mois                       | st                    |                                    | RELAT                         | - Very Loose                                    |
| AI<br>AI<br>H | D/T S<br>FA H           | olid fligh             | it augei<br>ght auge  | r: TC-Bit<br>er                       | shown                      | nflow          |                   | F<br>  \      | PID - Photoionisation Detector<br>/S - Vane Shear; P=Peak,  | W - Wet<br>PL - Plas                      | tic limit             |                                    |                               | <ul> <li>Loose</li> <li>Medium Dense</li> </ul> |
| W<br>R        | 'B W<br>R R             | ashbor<br>ock rolle    | e drillin<br>er       | g                                     | water o                    | outflow        |                   |               | R=Resdual (uncorrected kPa)   | LL - Liqui<br>w - Mois                    | id limit<br>sture con | tent                               | D<br>VD                       | <ul><li>Dense</li><li>Very Dense</li></ul>      |
| Re<br>ab      | efer to ex<br>breviatio | planatory              | notes fo              | or details of<br>escriptions          | L                          |                | CAR               | D             | NO (NSW/ACT) PTY L  | TD  |                       |                                    | I                             |   |

CARDNO.GLB Log CARDNO NON-CORED KYEEMAGH BOREHOLE LOGS.GPJ <<DrawingFile>> 03/12/2018 16:17 10.0.00 Datgel AGS RTA, Photo, Monitoring Tools

|  | $\square$                                     | ) C  | arc   | <b>lno</b> °   |   |                         |                            |  |   | ΤE   | ST PIT LOG SHEET  |
|--|---|--|---|--|---|-------------------------|----------------------------|--|---|--|---|
| Clie   | ent:  | .  | )<br>DWP  | Australia  | and Go                                    | otechn                  | ical                       | Investigation  |   | ł  | Hole No: TP13   |
| Loc  | atio  | n: I   | Kyee  | magh Infants School, I   | Kyeema                                    | agh, NS                 | SW                         | Job No: 5017190157   |   |  | Sheet: 1 of 1   |
| Pos  | sitio   | n: See   | atta  | ched plan  |   |                         |                            | Angle from Horizontal: 90°   |   | Surfac   | e Elevation:  |
| Exc  | ava   | tion D   | imer  | isions:  |   |                         |                            | Excavation Methou.   |   | Contra   | ctor:   |
| Dat  | e Ex  | cavat  | ed: 1   | 0/11/18  |   |                         |                            | Logged By: JG  |   | Check  | ed By:  |
| E  | xcava   | ation  | -   | Sampling & Testing   |   |                         |                            | Material Description   |   |  |   |
| Method   | Resistance                                    | Stability  | Water   | Sample or<br>Field Test  | Depth (m)                                 | Graphic<br>Log          | Classification             | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure   | Moisture<br>Condition                                   | Consistency<br>Relative<br>Density             | STRUCTURE<br>& Other Observations   |
|  |   |  |   | ES 0.10 m<br>TP13_0.1  |   | لد علد علد<br>علد علد ع |                            | 0.10m Silty SAND: fine to medium grained, poorly   |   |  | TOPSOIL<br>0.00 m: PID = 0.6 ppm, bricks,   |
|  |   |  |   | ES 0.40 m  | -   |                         |                            | 'gravel        /         FILL: SAND: fine to medium grained, gap graded,   | D   |  | FILL  |
|  |   |  |   | TP13_0.4   | _   |                         | <u> </u>                   | brown, trace fine to medium grained gravel   | <u> </u>  | ₋_   | Concrete chunks present   |
|  |   |  |   |  | 0.5<br>-<br>-                             |                         | SP                         | brown  | м   | MD   | -   |
|  |   |  |   |  | - 1.0                                     | <u>Nevider</u>          |                            | 0.90m<br>TERMINATED AT 0.90 m<br>Target depth  |   |  | -   |
|  |   |  |   |  | -   |                         |                            |  |   |  |   |
|  |   |  |   |  | -<br>1.5                                  |                         |                            |  |   |  | -   |
|  |   |  |   |  | -   |                         |                            |  |   |  |   |
|  |   |  |   |  | - 2.0                                     |                         |                            |  |   |  | -   |
|  |   |  |   |  | -   |                         |                            |  |   |  |   |
| g Tools  |   |  |   |  | -   |                         |                            |  |   |  |   |
| Aonitorin  |   |  |   |  | - 2.5                                     |                         |                            |  |   |  | -   |
| Photo, N   |   |  |   |  |   |                         |                            |  |   |  |   |
| s RTA, F   |   |  |   |  | -   |                         |                            |  |   |  |   |
| gel AGS  |   |  |   |  | - 3.0                                     |                         |                            |  |   |  | -   |
| 00 Dat   |   |  |   |  |   |                         |                            |  |   |  |   |
| 10.0.0   |   |  |   |  | +   |                         |                            |  |   |  |   |
| 8 16:17  |   |  |   |  | - 3.5                                     |                         |                            |  |   |  | -   |
| v12/201  |   |  |   |  |   |                         |                            |  |   |  |   |
| e>> 00   |   |  |   |  | -   |                         |                            |  |   |  |   |
| awingFi  |   |  |   |  | - 4.0                                     |                         |                            |  |   |  | -   |
| 20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>2        |   |  |   |  | È   |                         |                            |  |   |  |   |
| GS.GP  |   |  |   |  | -   |                         |                            |  |   |  |   |
| DLE LO   |   |  |   |  | - 4.5<br>-                                |                         |                            |  |   |  | -   |
| SH BOREHO  |   |  |   |  | -   |                         |                            |  |   |  |   |
|  |   |  |   | DENETDATION  |   |                         |                            |  |   |  |   |
| ARDNO NON-CORED KY   | C E F<br>A F<br>DN S<br>H A<br>S<br>S<br>VV S | -<br>Excavato<br>Ripper<br>Hand aug<br>Push tub<br>Sonic dril<br>Nir hamm<br>Percussio<br>Short spii | r buck<br>ger<br>e<br>ling<br>lier<br>on sam<br>ral aug | et VE Very Easy<br>F Easy<br>F Firm<br>H Hard<br>VH Very Hard<br>WATER<br>er V.Bit Vater | -<br>(No Resista<br>(Refusal)<br>Level on | nnce)<br>Date           | S<br>H<br>D<br>P<br>M<br>P | PT - Standard Penetration Test     B     Build Es       P - Hand/Pocket Penetrometer     D     Dist       CP - Dynamic Cone Penetrometer     U     Thir       SP - Perth Sand Penetrometer     U     Thir       IC - Moisture Content     MOISTURE       BT - Plate Bearing Test     D     Dry       //P - Borehole Impression Test     M     Moisture | k disturbe<br>curbed sa<br>ironment<br>n wall tub<br>st | ed sample<br>ample<br>tal sample<br>e 'undistu | VS - Very Soft<br>S - Soft<br>F - Firm<br>VSt - Stiff<br>VSt - Very Stiff<br>H - Hard<br><b>RELATIVE DENSITY</b><br>VI - Very Lonse |
| AL<br>AL<br>IA<br>IA<br>IA<br>IA<br>IA<br>IA<br>IA<br>IA<br>IA<br>IA<br>IA<br>IA<br>IA | 5/V S<br>5/T S<br>FA H<br>B V<br>R F          | Solid fligh<br>Solid fligh<br>Hollow flig<br>Vashbor<br>Rock rolle                                   | n auge<br>it auge<br>ght aug<br>e drillir<br>er         | n. v-⊅nt<br>r: TC-Bit<br>ger water<br>ig water   | inflow<br>outflow                         |                         | P<br>V                     | ID - Photoionisation Detector<br>S - Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa)<br>W - We<br>PL - Pla:<br>LL - Liqu<br>w - Moi   | t<br>stic limit<br>uid limit<br>sture cor               | ntent  | VL - Very Loose<br>L - Loose<br>MD - Medium Dense<br>D - Dense<br>VD - Very Dense   |
| ICARON Ke  | fer to e<br>previation                        | xplanatory   | notes f   | or details of<br>lescriptions  |   | CAR                     | D                          | IO (NSW/ACT) PTY LTD   |   |  |   |

| <b>C</b>  | $\square$  | <b>C</b>           | aro             | dno°           |                    |                                      |                         |                                 |  |   |   | TE   | ST PIT LOG SHEET   |
|---|--|--------------------|-----------------|----------------|--------------------|--------------------------------------|-------------------------|---------------------------------|--|---|---|--|--|
| Clie<br>Pro   | nt:<br>iect:   |                    | DWP<br>Detai    | Australia      | estigation a       | and Ge                               | otechn                  | ical                            | Investigation  |   |   | ŀ  | Hole No: TP14  |
| Loc   | ation  | <b>1:</b>          | Kyee            | magh Infan     | its School, k      | (yeema                               | agh, NS                 | SW                              | Job No: 5017190157   |   |   |  | Sheet: 1 of  |
| Pos   | ition  | : See              | atta            | ched plan      |                    |                                      |                         |                                 | Angle from Horizontal  | : 90°   | :   | Surfac                                       | e Elevation:   |
| Exc   | avati  | ion D              | imer            | isions:        | avalor             |                                      |                         |                                 |  |   |   | Contra                                       | ctor:  |
| Dat   | e Exc  | cavat              | ed: 1           | 10/11/18       |                    |                                      |                         |                                 | Logged By: JG  |   | (   | Checke                                       | ed By:   |
| Ex  | cavat  | ion                |                 | Samplin        | ig & Testing       |                                      |                         |                                 | Materia  | al Description  |   |  |  |
| Method  | Resistance   | Stability          | Water           | Sar<br>Fie     | nple or<br>ld Test | Depth (m)                            | Graphic<br>Log          | Classification                  | SOIL TYPE, plasticity or particle cha<br>colour, secondary and minor com<br>ROCK TYPE, grain size and type,<br>fabric & texture, strength, weath<br>defects and structure  | racteristic,<br>ponents<br>, colour,<br>iering,   | Moisture<br>Condition   | Consistency<br>Relative<br>Density           | STRUCTURE<br>& Other Observations  |
| •   |  |                    |                 | ES 0.10 m      |                    |                                      |                         |                                 | 0.10m FILL: Silty SAND: fine to medium gra   | ained, gap  | D   |  | FILL   |
|   |  |                    |                 | 11-14_0.1      |                    | -[                                   |                         |                                 | SAND: fine to medium grained, unifo  | /<br>orm, grey  |   |  | MARINE   |
|   |  |                    |                 |                |                    | -                                    |                         |                                 | yellow   |   |   |  | 0.10 m: PID = 0.7 ppm  |
| Ï   |  |                    |                 |                |                    | -                                    |                         | SP                              |  |   | м   | L  |  |
|   |  |                    |                 | ES 0.70 m      |                    | - 0.5                                |                         |                                 |  |   |   |  |  |
| ¥   |  | -                  |                 | TP14_0.7       |                    |                                      |                         |                                 |  |   |   |  |  |
|   |  |                    |                 |                |                    | - 1.0<br>- 1.0<br>- 1.5<br>          |                         |                                 | Target depth   |   |   |  |  |
|   |  |                    |                 |                |                    | Ē                                    |                         |                                 |  |   |   |  |  |
|   |  |                    |                 |                |                    | ŀ                                    |                         |                                 |  |   |   |  |  |
|   |  |                    |                 |                |                    | -4.0                                 |                         |                                 |  |   |   |  |  |
|   |  |                    |                 |                |                    | +                                    |                         |                                 |  |   |   |  |  |
|   |  |                    |                 |                |                    | ŀ                                    |                         |                                 |  |   |   |  |  |
|   |  |                    |                 |                |                    | Ĺ                                    |                         |                                 |  |   |   |  |  |
|   |  |                    |                 |                |                    | -4.5                                 |                         |                                 |  |   |   |  |  |
|   |  |                    |                 |                |                    | F                                    |                         |                                 |  |   |   |  |  |
|   |  |                    |                 |                |                    | Ĺ                                    |                         |                                 |  |   |   |  |  |
|   |  |                    |                 |                |                    | ŀ                                    |                         |                                 |  |   |   |  |  |
| ME  | THOD   | 1                  | I               | <u> </u>       | PENETRATION        |                                      | 1                       | F                               | IELD TESTS   | SAMPLES   | 1   | <u> </u>                                     | SOIL CONSISTENCY   |
| EX<br>R<br>HA<br>PT<br>SO<br>AH<br>PS<br>AD<br>AD<br>HF | X Excavator bucket<br>Ripper<br>A Hand auger<br>T Push tube<br>ON Sonic drilling<br>H Air hammer<br>S Percussion sampler<br>S Short spiral auger: V-Bit<br>D/V Solid flight auger: TC-Bit<br>IFA Hollow flight auger |                    |                 |                |                    | (No Resista<br>(Refusal)<br>Level on | <sup>nce)</sup><br>Date | S<br>F<br>F<br>M<br>F<br>W<br>F | PT     -     Standard Penetration Test       IP     -     Hand/Pocket Penetrometer       ICP     -     Dynamic Cone Penetrometer       SP     -     Perth Sand Penetrometer       IC     -     Moisture Content       BT     -     Plate Bearing Test       I/P     -     Borehole Impression Test       ID     -     Photoinisation Detector       'S     -     Vane Shear; P=Peak, | B - Bui<br>D - Dis<br>ES - En<br>U - Thi<br>MOISTURE<br>D - Dry<br>M - Mo<br>W - We<br>PL - Pla | Ik disturbed<br>sturbed sa<br>vironment<br>in wall tub<br>:<br>vist<br>sist<br>sist<br>limit<br>uid limit | ed sample<br>mple<br>al sample<br>e 'undistu | e         VS         Very Soft           S         Soft         S           srbed"         F         Firm           std         Stiff         Vst           VB         Very Stiff         H           H         Hard         RELATIVE DENSITY           VL         Very Loose         L           L         Loose         MD |
| WE<br>RR  | S W  | ashbor<br>ock roll | e drillir<br>ər | ng             |                    | outtlow                              |                         |                                 | R=Resdual (uncorrected kPa)  | w - Mo  | isture cor  | itent  | D - Dense<br>VD - Very Dense   |
| Ref   | er to ex   | planator           | / notes t       | for details of |                    |                                      |                         |                                 |  |   |   |  |  |
| abb   | reviation  | ns and b           | asis of o       | descriptions   |                    |                                      | CAR                     | (D)                             | NO (NSW/ACT) PTY   | LID   |   |  |  |

|   | $\left  \right\rangle$   | ) Ca                             | arc                        | no                                   |                                    |                      |                                 |   |  |  |   | TE   | <u>ST PIT LOG SHEET</u>   |
|---|--|----------------------------------|----------------------------|--------------------------------------|------------------------------------|----------------------|---------------------------------|---|--|--|---|--|---|
| Clie<br>Pro<br>Loc                                      | nt:<br>ject:<br>atio   | l<br>I<br>n: I                   | OWP<br>Detai<br>Kyee       | Australia<br>led Site I<br>magh Infa | nvestigation a<br>ants School, k   | ind Ge<br>(yeem      | otechn<br>agh, N                | ical<br>SW  | Investigation<br>Job No: 5017190157  |  |   | ŀ  | Hole No: TP15<br>Sheet: 1 of 1  |
| Pos   | itior  | n: See                           | atta                       | ched plar                            | 1                                  | -                    |                                 |   | Angle from Horizontal: 9   | 0°   | 5   | Surface  | e Elevation:  |
| Mac   | chine  | е Туре                           | e: 10                      | tonne Ex                             | cavator                            |                      |                                 |   | Excavation Method:   |  |   |  |   |
| Exc   | avat   | ion D                            | imer                       | sions:                               |                                    |                      |                                 |   |  |  | 0   | Contra   | ctor:   |
| Date  | e Ex   | cavat                            | ed: 1                      | 0/11/18                              |                                    |                      |                                 |   | Logged By: JG  |  | (   | Checke   | ed By:  |
| Ex  | cava   | tion                             |                            | Samp                                 | ling & Lesting                     |                      |                                 |   | Material De  | escription                                   |   |  |   |
| Method  | Resistance   | Stability                        | Water                      | S                                    | ample or<br>ield Test              | Depth (m             | Graphic<br>Log                  | Classification  | SOIL TYPE, plasticity or particle characte<br>colour, secondary and minor compone<br>ROCK TYPE, grain size and type, colo<br>fabric & texture, strength, weathering<br>defects and structure | eristic,<br>ents<br>our,<br>g,               | Moisture<br>Condition                       | Consistency<br>Relative<br>Density   | STRUCTURE<br>& Other Observations   |
| A   |  |                                  |                            | ES 0.10 m                            |                                    |                      | لىر غلىر غلير<br>غلير غلير غ    |   | 0.10m SAND: fine to medium grained, gap grad   | ded, grey                                    | D   |  |   |
|   |  |                                  |                            | ES 0.60 m                            |                                    | -0.5                 |                                 |   | FILL: SAND: fine to medium grained, poo<br>graded, grey brown  | orly   |   |  | Cline Control |
| EX  |  |                                  |                            | TP15_0.6                             |                                    | - 1.0                |                                 | SP  | 0.60mSAND: fine to medium grained, uniform,<br>brown   | yellow                                       | Μ   |  | MARINE — — — — — — — — — — — — — — — — — — —  |
| ╞╋  |  | _                                |                            |                                      |                                    |                      |                                 |   | 1.10m<br>TERMINATED AT 1.10 m  |  |   |  |   |
|   |  |                                  |                            |                                      |                                    | -<br>-<br>-<br>- 1.5 |                                 |   | Target depth   |  |   |  |   |
|   |  |                                  |                            |                                      |                                    | -<br>-<br>-          |                                 |   |  |  |   |  |   |
|   |  |                                  |                            |                                      |                                    | - 2.0                |                                 |   |  |  |   |  |   |
|   |  |                                  |                            |                                      |                                    | -<br>-<br>2.5        |                                 |   |  |  |   |  |   |
|   |  |                                  |                            |                                      |                                    | -                    |                                 |   |  |  |   |  |   |
|   |  |                                  |                            |                                      |                                    | - 3.0<br>-<br>-      |                                 |   |  |  |   |  |   |
|   |  |                                  |                            |                                      |                                    | -<br>3.5<br>-        |                                 |   |  |  |   |  |   |
|   |  |                                  |                            |                                      |                                    |                      |                                 |   |  |  |   |  |   |
|   |  |                                  |                            |                                      |                                    | -                    |                                 |   |  |  |   |  |   |
|   |  |                                  |                            |                                      |                                    | -<br>4.5<br>-        |                                 |   |  |  |   |  |   |
| ME  |  |                                  |                            |                                      | PENETRATION                        | -                    |                                 | F   | FID TESTS  |  |   |  |   |
| EX<br>R<br>HA<br>PT<br>SO<br>AH<br>PS<br>AD<br>AD<br>HF | METHOD     PENETRATION       XX     Excavator bucket     VE     Very Easy (No Resile       XA     Hand auger     F     Firm       YD     Push tube     H     Hard       SON     Sonic drilling     H     Hard       VH     Very Hard (Refusal)     VH     Very Hard (Refusal)       VD/V     Solid flight auger:     V-Bit       VD/V     Solid flight auger:     V-Bit       VD/T     Solid flight auger:     V-Bit       VD/T     Solid flight auger:     Shown       VD/T     Solid flight flight auger:     Water Level of shown |                                  |                            |                                      | No Resista<br>Refusal)<br>Level on | ance)<br>Date        | S<br>H<br>D<br>P<br>N<br>P<br>V | PT     - Standard Penetration Test     P       P     - Hand/Pocket Penetrometer     P       CP     - Dynamic Cone Penetrometer     P       SP     - Perth Sand Penetrometer     P       C     - Moisture Content     I       BT     - Plate Bearing Test     P       IP     - Borehole Impression Test     I       D     - Photoionisation Detector     N       S     - Vane Shear; P=Peak,     I | B - Bulk c<br>D - Distu<br>ES - Envir<br>U - Thin V<br>MOISTURE<br>D - Dry<br>M - Moist<br>W - Wet<br>PL - Plasti  | disturbe<br>rbed sar<br>onmenta<br>wall tube | d sample<br>mple<br>al sample<br>e 'undistu | rbed' VS - Very Soft<br>S - Soft<br>F - Firm<br>VSt - Stiff<br>VSt - Very Siff<br>H - Hard<br><b>RELATIVE DENSITY</b><br>VL - Very Loose<br>L - Loose<br>MD - Medium Dense |   |
| RR<br>RR<br>Ref<br>abb                                  | B R<br>R<br>er to ex<br>reviatio   | ashbor<br>ock rolle<br>planatory | e drillin<br>er<br>notes f | or details of<br>escriptions         | — • water o                        | outflow              | CAR                             |   | R=Resdual (uncorrected kPa)  | W - Moist                                    | ure con                                     | tent   | U - Dense<br>VD - Very Dense  |

| C           | D              | C                   | aro                 | dno°                     |                          |                 |                                    |                |   |  |                         | ΤE                                 | ST PIT LOG SHEET                  |
|-------------|----------------|---------------------|---------------------|--------------------------|--------------------------|-----------------|------------------------------------|----------------|---|--|-------------------------|------------------------------------|-----------------------------------|
| Clie<br>Pro | nt:<br>ject:   |                     | DWP<br>Deta         | Australia<br>led Site In | vestigation a            | nd Ge           | otechn                             | ical           | Investigation   |  |                         | ŀ                                  | Hole No: TP16                     |
| Loc         | ation          | 1: I                | Kyee                | magh Infa                | nts School, K            | lyeema          | agh, N                             | SW             | Job No: 5017190157  |  |                         | 0                                  | Sheet: 1 of 7                     |
| Mac         | tion           | : See               | e atta<br>e: 10     | tonne Exc                | avator                   |                 |                                    |                | Excavation Method   | : 90°  |                         | Surfac                             | e Elevation:                      |
| Exc         | avati          | on D                | imer                | isions:                  |                          |                 |                                    |                | Excuration motiloui   |  | (                       | Contra                             | ctor:                             |
| Dat         | e Exc          | cavat               | ed: 1               | 0/11/18                  |                          |                 |                                    |                | Logged By: JG   |  |                         | Checke                             | ed By:                            |
| E>          | cavat          | ion                 |                     | Sampli                   | ng & Testing             |                 |                                    |                | Materia   | al Description                               |                         |                                    |                                   |
| Method      | Resistance     | Stability           | Water               | Sa<br>Fi                 | ample or<br>eld Test     | Depth (m)       | Graphic<br>Log                     | Classification | SOIL TYPE, plasticity or particle cha<br>colour, secondary and minor com<br>ROCK TYPE, grain size and type,<br>fabric & texture, strength, weath<br>defects and structure | racteristic,<br>conents<br>colour,<br>ering, | Moisture<br>Condition   | Consistency<br>Relative<br>Density | STRUCTURE<br>& Other Observations |
| •           |                |                     |                     | ES 0.10 m                |                          | _               | ىر<br>بىلىر يىلىر<br>بىلىر يىلىر ي | -              | 0.10m Silty SAND: fine to medium grained,   | poorly                                       | D                       |                                    | TOPSOIL                           |
|             |                |                     |                     | <u></u>                  | JA 300, QA 400           | -[              |                                    |                | graded, grey<br>SAND: fine to medium grained, poor  | /  |                         | <u> </u>                           | MARINE                            |
|             |                |                     |                     |                          |                          | -               |                                    | :              | yellow grey   | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,      |                         |                                    | 0.10 m: PID = 0.3ppm              |
| ХЦ          |                |                     |                     |                          |                          | F               |                                    | SP             |   |  | м                       | L                                  |                                   |
|             |                |                     |                     |                          |                          | - 0.5           |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     | ES 0.80 m                |                          | [               |                                    | :              |   |  |                         |                                    |                                   |
| V           |                |                     |                     | TP16_0.8                 |                          | _               |                                    | -              | 0.80m   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | +               |                                    |                | Target depth  |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | - 1.0           |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | F               |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          |                 |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | +               |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | - 1.5           |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | F               |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | [               |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | +               |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | - 2.0           |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | F               |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | t               |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | [               |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | -2.5            |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | ł               |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | F               |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | Ĺ               |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | -3.0            |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | -               |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | +               |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | F               |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | 35              |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | - 0.0           |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | F               |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | F               |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | L <sub>10</sub> |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          |                 |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | +               |                                    |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | F               | 1                                  |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          |                 | 1                                  |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | - 4.5           | 1                                  |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | F               | 1                                  |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | F               | 1                                  |                |   |  |                         |                                    |                                   |
|             |                |                     |                     |                          |                          | E_              |                                    |                |   |  |                         |                                    |                                   |
| ME          | THOD           |                     |                     |                          | PENETRATION              |                 |                                    | F              | HELD TESTS  | SAMPLES                                      | 1                       |                                    |                                   |
| R           | Ex<br>Rij      | cavato              | n DUCK              | el                       | VE Very Easy (<br>E Easy | No Resista      | ance)                              |                | IP - Hand/Pocket Penetrometer   | D - Bul                                      | turbed sa               | imple                              | S - Soft                          |
| HA<br>PT    | Ha<br>Pu       | and aug             | ger<br>e            |                          | F Firm<br>H Hard         |                 |                                    |                | CP - Dynamic Cone Penetrometer  | LS - Env<br>U - Thi                          | vironment<br>n wall tub | ai sample<br>e 'undistu            | ribed' F - Firm<br>St - Stiff     |
| SC          | N So<br>Air    | nic dri<br>hamm     | lling<br>her        |                          | VH Very Hard (           | Refusal)        |                                    |                | IC - Moisture Content   | MOISTURE                                     |                         |                                    | VSt - Very Stiff<br>H - Hard      |
| PS<br>AS    | Pe<br>Sh       | ercussi<br>ort spi  | on san<br>ral aug   | npler<br>er              | WATER<br>Water           | Level on        | Date                               | F              | PBT - Plate Bearing Test<br>MP - Borehole Impression Test   | D - Dry<br>M - Mo                            | /<br>ist                |                                    |                                   |
| AD<br>AD    | /V So<br>/T So | olid fligh          | nt auge             | er: V-Bit<br>er: TC-Bit  | shown                    | nflow           |                                    | F              | PID - Photoionisation Detector  | W - We                                       | et<br>Istic limit       |                                    | VL - Very Loose<br>L - Loose      |
| HF          | A Ho<br>B W    | ollow fli<br>ashbor | ght au<br>e drillir | ger<br>1g                |                          | outflow         |                                    | `              | <ul> <li>Vane Shear; P=Peak,<br/>R=Resdual (uncorrected kPa)</li> </ul>   | LL - Liq                                     | uid limit               | ntent                              | MD - Medium Dense<br>D - Dense    |
| RF          | Ro             | ock roll            | er                  |                          |                          |                 |                                    |                | · /   | - ivio                                       | istare cor              | nont                               | VD - Very Dense                   |
| Ref         | er to exp      | blanator            | y notes t           | or details of            |                          |                 | CAR                                |                | NO (NSW/ACT) PTY  | LTD  |                         |                                    |                                   |
| -           |                |                     |                     |                          |                          |                 |                                    |                |   |  |                         |                                    |                                   |

|                            |   | <b>C</b>                 | arc                 | <b>Ino</b> <sup>®</sup>                      |                           |                |               |   |   |  | TE   | ST PIT LOG SHEET  |
|----------------------------|---|--------------------------|---------------------|--|---------------------------|----------------|---------------|---|---|--|--|---|
| Pro                        | ent:<br>ject:   |                          | DvvP<br>Detai       | Australia<br>led Site Investigation          | and Ge                    | otechn         | ical          | Investigation   |   |  | ŀ  | Hole No: TP17   |
| Loc                        | atior   | 1:                       | Kyee                | magh Infants School,                         | , Kyeema                  | agh, N         | SW            | Job No: 5017190157  |   |  |  | Sheet: 1 of   |
| Pos                        | sition  | : See                    | e atta              | ched plan                                    |                           |                |               | Angle from Horizontal: 90   | 0°  |  | Surface                                      | e Elevation:  |
| Fxc                        | avat  | ion D                    | e: 10<br>imer       | ionne Excavalor                              |                           |                |               | Excavation Method:  |   |  | Contra                                       | ctor:   |
| Dat                        | e Exe   | cavat                    | ed: 1               | 0/11/18                                      |                           |                |               | Logged By: JG   |   | (  | Checke                                       | ed By:  |
| E                          | kcava   | tion                     |                     | Sampling & Testing                           |                           |                |               | Material De   | escription  |  |  | •   |
| Method                     | Resistance  | Stability                | Water               | Sample or<br>Field Test                      | Depth (m)                 | Graphic<br>Log | lassification | SOIL TYPE, plasticity or particle characte<br>colour, secondary and minor compone<br>ROCK TYPE, grain size and type, colo<br>fabric & texture, strength, weathering<br>defects and structure                                    | eristic,<br>ents<br>our,<br>g,                          | Moisture<br>Condition                        | Consistency<br>Relative<br>Density           | STRUCTURE<br>& Other Observations   |
|                            |   |                          |                     | ES 0 10 m                                    |                           | ي عليہ عليہ    | 0             |   |   |  |  | TOPSOIL   |
| Ī                          |   |                          |                     | TP17_0.1                                     |                           | على على ع      | <u>-</u>      | grey brown, silt  | aded,<br>   |  | +  | 0.00 m: PID = 0.4ppm  |
| EX-                        |   |                          |                     | ES 0.50 m                                    | -                         |                | SP            | SAND: fine to medium grained, uniform,<br>grey  | yellow  | м  | MD   | 0.10 m: PID = 0.4ppm  |
| ┢╹                         |   |                          |                     |  | 0.5                       |                |               | TERMINATED AT 0.50 m  |   |  |  |   |
|                            |   |                          |                     |  | Ľ                         |                |               | Target depth  |   |  |  |   |
|                            |   |                          |                     |  | -<br>- 1.0<br>-<br>-<br>- |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | -                         |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | L                         |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | -2.0                      |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | -                         |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | -                         |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | -2.5                      |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | -                         |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | -<br>3.0<br>-             |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | -                         |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | -                         |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | - 3.5                     |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | -                         |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | F                         |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | -4.0                      |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | -                         |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | Ę                         |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | -                         |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | -4.5                      |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | Ĺ                         |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | ŀ                         |                |               |   |   |  |  |   |
|                            |   |                          |                     |  | F                         |                |               |   |   |  |  |   |
| R<br>HA<br>PT              |   | cavato<br>pper<br>and au | or buck<br>ger<br>e | et VE Very Ea:<br>E Easy<br>F Firm<br>H Hard | ON<br>sy (No Resista      | ince)          | F<br>  S<br>  | IELD TESTS         S           PT - Standard Penetration Test         E           IP - Hand/Pocket Penetrometer         E           ICP - Dynamic Cone Penetrometer         E           ISP - Perth Sand Penetrometer         E | SAMPLES<br>B - Bulk<br>D - Dist<br>ES - Env<br>U - Thir | disturbe<br>urbed sa<br>ironment<br>wall tub | ed sample<br>mple<br>al sample<br>e 'undistu | SOIL CONSISTENCY<br>VS - Very Soft<br>S - Soft<br>F - Firm<br>rbed' St - Stiff                        |
| AF<br>PS<br>AS<br>AE<br>AE | VH Air hammer<br>NS Percussion sampler<br>SS Short spiral auger<br>D/V Solid flight auger: V-Bit<br>MATER<br>WATER<br>WATER<br>Water<br>Show Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Wa |                          |                     |  |                           | Date           | F<br>F        | IC     - Moisture Content       IBT     - Plate Bearing Test       IP     - Borehole Impression Test       ID     - Photoionisation Detector       VS     - Vane Shear; P=Peak,   | MOISTURE<br>D - Dry<br>M - Mois<br>W - Wet<br>PL - Plas | st<br>t<br>stic limit                        |  | VSt - Very Stiff<br>H - Hard<br>RELATIVE DENSITY<br>VL - Very Loose<br>L - Loose<br>MD - Medium Dense |
| WI<br>RF                   | B W<br>R R  | ashbor<br>ock roll       | e drillir<br>er     | ig — wate                                    | er outflow                |                |               | R=Resdual (uncorrected kPa)   | и - Liqu<br>W - Mois                                    | sture cor                                    | itent  | D - Dense<br>VD - Very Dense  |
| Re                         | fer to ex   | planator                 | y notes f           | or details of                                |                           | CAR            |               | NO (NSW/ACT) PTY I T  | D   |  |  |   |
| aul                        |   | uuu                      |                     |  |                           |                |               | · · · · · · · · · · · · · · · · · · ·   | -   |  |  |   |

|          |                | ) <b>C</b>          | arc                  | dino <sup>®</sup>                     |                   |                         |               |  |                               | TE                                 | ST PIT LOG SHEET                  |
|----------|----------------|---------------------|----------------------|---------------------------------------|-------------------|-------------------------|---------------|--|-------------------------------|------------------------------------|-----------------------------------|
| Pro      | ject:          |                     | Detai                | Australia<br>led Site Investigation a | and Ge            | otechn                  | ical          | Investigation  |                               | ŀ                                  | Hole No: TP18                     |
| Loc      | atior          | n:                  | Kyee                 | magh Infants School, I                | Kyeem             | agh, NS                 | SW            | Job No: 5017190157   |                               |                                    | Sheet: 1 of 1                     |
| Pos      | ition          | : See               | atta                 | ched plan                             |                   |                         |               | Angle from Horizontal: 90°   |                               | Surfac                             | e Elevation:                      |
| Mac      | cnine<br>avati | ion D               | 9: 10<br>imor        | tonne Excavator                       |                   |                         |               | Excavation Method:   |                               | Contra                             | ctor:                             |
| Dat      | e Exc          | cavat               | ed: 1                | 0/11/18                               |                   |                         |               | Logged By: JG  |                               | Check                              | ed Bv:                            |
| E>       | cavat          | ion                 |                      | Sampling & Testing                    |                   |                         |               | Material Descrip   | otion                         |                                    |                                   |
|          |                |                     |                      | 1 0 1 0                               |                   |                         | ç             |  |                               |                                    |                                   |
| Method   | Resistance     | Stability           | Water                | Sample or<br>Field Test               | Depth (r          | Graphic<br>Log          | Classificatio | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure | Moisture<br>Condition         | Consistency<br>Relative<br>Density | STRUCTURE<br>& Other Observations |
| •        |                |                     |                      | ES 0.10 m                             |                   | ند علد علد<br>علد علد ع |               | 0.10m Silty SAND: fine to medium grained, poorly   | D                             |                                    | TOPSOIL                           |
| -<br>X   |                |                     |                      | ES 0.40 m                             | -1                |                         |               | SAND: fine to medium grained, uniform, yellow  |                               |                                    |                                   |
| Ĩ        |                |                     |                      | IP18_0.4                              | F                 |                         | SP            | grey   | м                             | L                                  | 0.10 m: PID = 0.1ppm              |
|          |                | -                   |                      |                                       | -                 | <u>- Maria de</u>       |               | 0.40m<br>TERMINATED AT 0.40 m  |                               |                                    |                                   |
|          |                |                     |                      |                                       | - 0.5             |                         |               | Target depth   |                               |                                    |                                   |
|          |                |                     |                      |                                       |                   |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       | -                 |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       | F                 |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       | - 1.0             |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       | T I               |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       |                   |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       | -                 |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       | - 1.5             |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       | F                 |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       |                   |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       | -                 |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       | - 2.0             |                         |               |  |                               |                                    | -                                 |
|          |                |                     |                      |                                       | F                 |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       | Ľ                 |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       |                   |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       | - 2.5             |                         |               |  |                               |                                    | -                                 |
|          |                |                     |                      |                                       | F                 |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       | F                 |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       | [                 |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       | - 3.0             |                         |               |  |                               |                                    | -                                 |
|          |                |                     |                      |                                       | F                 |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       | F                 |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       |                   |                         |               |  |                               |                                    |                                   |
|          |                |                     |                      |                                       | 3.5               |                         |               |  |                               |                                    | -                                 |
|          |                |                     |                      |                                       | +                 | 1                       |               |  |                               | 1                                  |                                   |
|          |                |                     |                      |                                       | ŀ                 | 1                       |               |  |                               | 1                                  |                                   |
|          |                |                     |                      |                                       | F                 | 1                       |               |  |                               | 1                                  |                                   |
|          |                |                     |                      |                                       | L <sub>40</sub>   | 1                       |               |  |                               | 1                                  |                                   |
|          |                |                     |                      |                                       |                   | 1                       |               |  |                               | 1                                  |                                   |
|          |                |                     |                      |                                       | ŀ                 | 1                       |               |  |                               | 1                                  |                                   |
|          |                |                     |                      |                                       | ł                 | 1                       |               |  |                               | 1                                  |                                   |
|          |                |                     |                      |                                       | L                 | 1                       |               |  |                               | 1                                  |                                   |
|          |                |                     |                      |                                       | -4.5              | 1                       |               |  |                               | 1                                  | -                                 |
|          |                |                     |                      |                                       | ŀ                 | 1                       |               |  |                               | 1                                  |                                   |
|          |                |                     |                      |                                       | F                 | 1                       |               |  |                               | 1                                  |                                   |
|          |                |                     |                      |                                       | F                 |                         |               |  |                               |                                    |                                   |
| ME       | THOD           |                     |                      | PENETRATION                           | N                 |                         | F             | IELD TESTS SAMP  | LES                           |                                    | SOIL CONSISTENCY                  |
| EX<br>R  | Ex<br>Ri       | cavato<br>pper      | r buck               | et VE Very Easy<br>E Easy             | (No Resista       | ance)                   | 8             | IP - Hand/Pocket Penetrometer D -  | Bulk disturb                  | ed sample<br>ample                 | vS - Very Soft<br>S - Soft        |
| HA<br>PT | ι Ha<br>Ρι     | and aug<br>Ish tub  | ger<br>e             | F Firm<br>H Hard                      |                   |                         |               | CCP - Dynamic Cone Penetrometer U -  | Environmen<br>Thin wall tut   | ital sample<br>be 'undistu         | e F - Firm<br>Irbed' St - Stiff   |
| SC<br>AH | N So<br>Ai     | onic dri<br>r hamm  | ling<br>1er          | VH Very Hard                          | (Refusal)         |                         |               | IC - Moisture Content MOIS   | TURE                          |                                    | VSt - Very Stiff<br>H - Hard      |
| PS<br>AS | Pe<br>Sh       | ercussi<br>nort spi | on sam<br>ral aug    | er Water                              | Levelon           | Date                    | F "           | BT - Plate Bearing Test D -  | Dry<br>Moiot                  |                                    | RELATIVE DENSITY                  |
| AD<br>AD | /V So<br>/T So | olid fligh          | nt auge<br>nt auge   | r: V-Bit shown                        |                   | 2410                    | "             | MIP - DOTENDIE IMPRESSION LEST M -<br>MD - Photoionisation Detector W -  | woist<br>Wet                  |                                    | VL - Very Loose<br>L - Loose      |
| HF       | A Ho<br>B W    | ollow fli<br>ashbor | ght aug<br>e drillir | ger water                             | intiow<br>outflow |                         | \ \           | S - Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa)   | Plastic limit<br>Liquid limit |                                    | MD - Medium Dense<br>D - Dense    |
| RF       | R Ro           | ock roll            | er                   |                                       |                   |                         |               |  | Moisture co                   | ntent                              | VD - Very Dense                   |
| Ref      | er to ex       | planator            | / notes f            | or details of                         |                   |                         | יחי           |  |                               |                                    | I                                 |
| abb      | reviation      | ns and b            | asis of c            | lescriptions                          |                   | CAR                     | וט            |  |                               |                                    |                                   |

|  | $\mathcal{D}$   |                       | arc                  | lno  |  |   |                   |                       |  |   |   |  | TE  | ST PIT LOG  | SHEET   |
|--|---|-----------------------|----------------------|--|--|---|-------------------|-----------------------|--|---|---|--|---|---|---|
| Clie<br>Proj   | ent:<br>ject:<br>atior  | <br> <br>1:           | OWP<br>Detai<br>(vee | Australia<br>led Site II<br>magh Infa          | a<br>nvestigation a<br>ants School, K        | nd Ge   | otechn<br>agh, NS | ical                  | Inves  | stigation   |   |  | ŀ   | lole No:  | <b>TP19</b>   |
| Pos  | ition   | : See                 | atta                 | ched plar                                      | <u>ווייייייייייייייייייייייייייייייייייי</u> |   | - <b>3</b> ,      |                       |  | Angle from Horizontal:  | 90°   | 5  | Surface   | e Elevation:  |   |
| Mac  | chine   | Тур                   | e: 10                | tonne Ex                                       | cavator                                      |   |                   |                       |  | Excavation Method:  |   |  |   |   |   |
| Exc  | avat  | ion D                 | imen                 | sions:   |  |   |                   |                       |  |   |   | (  | Contra  | ctor:   |   |
| Date   | e Exe   | cavat                 | ed: 1                | 0/11/18  |  |   | 1                 |                       |  | Logged By: JG   |   | (  | Checke  | ed By:  |   |
| EX   | cava  | lion                  |                      | Samp   | ling & Testing                               |   |                   |                       | -  | Materia   | I Description   |  |   |   |   |
| Method   | Resistance  | Stability             | Water                | S  | ample or<br>ield Test                        | Depth (m  | Graphic<br>Log    | Classification        | :  | SOIL TYPE, plasticity or particle char<br>colour, secondary and minor comp<br>ROCK TYPE, grain size and type,<br>fabric & texture, strength, weather<br>defects and structure   | racteristic,<br>ponents<br>colour,<br>ering,  | Moisture<br>Condition  | Consistency<br>Relative<br>Density                  | STRUCTU<br>& Other Obse   | JRE<br>rvations   |
|  |   |                       |                      | ES 0.10 m<br>TP19_0.1<br>ES 0.30 m<br>TP19_0.3 |  | -/<br>-/  |                   |                       | 0.10m  | Silty SAND: fine to medium grained,<br>\graded, brown grey  | poorly<br>/ -   | D  |   | TOPSOIL<br>0.00 m: PID = 0.3ppm<br>FILL<br>0.10 m: PID = 3.3ppm   |   |
| EX   |   |                       |                      |  |  | - 0.5   |                   | SP                    | 0.30m  | graded, prown grey, fine to medium g<br>SAND: fine to medium grained, unifo<br>grey   | grained gravel<br>orm, yellow   | м  |   | MARINE  |   |
| <b>V</b>   |   | -                     |                      |  |  | +   | <u> George</u>    |                       | 0.80m  | TERMINATED AT 0.80 m  |   |  |   |   |   |
|  |   |                       |                      |  |  | - 1.0<br>- 1.0<br>                                    |                   |                       |  | TERMINATED AT 0.80 m<br>Target depth  |   |  |   |   |   |
| ME<br>EX<br>HA<br>PT<br>SO<br>AH<br>PS<br>AD<br>HF<br>WE<br>RR | METHOD     PENETRATION       EX     Excavator bucket     VE     Very Easy (No Resis       R     Ripper     E     Easy       PT     Push tube     Firm     H       SON     Sonic drilling     VH     Very Easy (No Resis       AH     Air hammer     H     Hard       PS     Percussion sampler     X     Short spiral auger       AD/T     Solid flight auger: V-Bit     WATER     Shown       MFA     Hollow flight auger     Water Level of shown       WB     Washbore drilling     water outflow       RR     Rock roller     water outflow |                       |                      |  |  | No Resista<br>Refusal)<br>Level on<br>nflow<br>utflow | nce)<br>Date      | FSH<br>□P×P<br>P<br>V | Field T<br>FT -<br>FT -<br>FT -<br>FSP -<br>FSP -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>FT -<br>F | ESTS<br>Standard Penetration Test<br>Hand/Pocket Penetrometer<br>Dynamic Cone Penetrometer<br>Perth Sand Penetrometer<br>Moisture Content<br>Plate Bearing Test<br>Borehole Impression Test<br>Photoionisation Detector<br>Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa) | SAMPLES       B     - Buil       D     - Dist       ES     - Env       U     - Thir       MOISTURE       D     - Dry       M     - Moist       V     - Plas       LL     - Liqu       w     - Moist | c disturbe<br>urbed sar<br>ironmenta<br>n wall tube<br>sti<br>t<br>tt<br>stic limit<br>sture con | d sample<br>mple<br>al sample<br>e 'undistu<br>tent | SOIL CON<br>VS - V<br>S - S<br>F - F<br>Forbed' St - S<br>VSt - V<br>H - F<br><b>RELATIVE</b><br>VL - V<br>L - L<br>MD - N<br>D - C<br>VD - V | ISISTENCY<br>Very Soft<br>Soft<br>irm<br>Very Stiff<br>tard<br>E DENSITY<br>Very Loose<br>oose<br>Aedium Dense<br>Dense<br>Very Dense |
| Ref<br>abb   | er to ex<br>previation  | planatory<br>ns and b | notes fo             | or details of<br>escriptions                   |  |   | CAR               | D                     | NO   | (NSW/ACT) PTY L   | _TD   |  |   |   |   |

CARDNO.GLB Log CARDNO NON-CORED KYEEMAGH BOREHOLE LOGS.GPJ <<DrawingFiles> 03/12/2018 16:17 10:0.000 Datget AGS RTA, Photo, Monitoring Tools
|  | $\sum$                |  | arc  | lno   |  |  |                                  |  |   |   | TE                                   | ST PIT LOG SHEET  |
|--|-----------------------|--|--|---|--|--|----------------------------------|--|---|---|--------------------------------------|---|
| Clie<br>Proj<br>Loc                                | ent:<br>ject:<br>atio | ן<br>ו<br>ח: ו   | OWP<br>Detai<br>Kvee   | Australia<br>led Site li<br>magh Infa           | nvestigation a<br>ants School, K   | nd Ge<br>veem  | otechn<br>agh. NS                | ical<br>SW                                     | Investigation   |   | ł                                    | Hole No: TP20   |
| Pos  | ition                 | : See  | atta   | ched plar                                       | 1  |  | <b></b>                          |  | Angle from Horizontal: 90°  |   | Surfac                               | e Elevation:  |
| Mac  | chine                 | э Тур  | e: 10  | tonne Ex  | cavator  |  |                                  |  | Excavation Method:  |   |                                      |   |
| Exc  | avat                  | ion D  | imen   | sions:  |  |  |                                  |  |   |   | Contra                               | ctor:   |
| Date   | e Ex                  | cavat  | ed: 1  | 0/11/18   |  | 1  |                                  |  | Logged By: JG   |   | Checke                               | ed By:  |
| Ex   | cava                  | tion   |  | Samp  | ling & Testing   |  |                                  | -  | Material Description  | 1   | I                                    |   |
| Method   | Resistance            | Stability  | Water  | S   | ample or<br>ield Test  | Depth (m   | Graphic<br>Log                   | Classification                                 | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure  | Moisture<br>Condition   | Consistency<br>Relative<br>Density   | STRUCTURE<br>& Other Observations   |
|  |                       |  |  | ES 0.10 m                                       |  |  | لىر خىلىر خىلىر<br>خىلىر خىلىر خ |  | 0.10m Silty SAND: fine to medium grained, poorly  | D   | <u> </u>                             |   |
|  |                       |  |  | ES 0.40 m<br>TP20_0.4                           |  |  |                                  |  | SAND: fine to medium grained, uniform, yellow brown   |   |                                      | FILL 0.10 m: PID = 0.3ppm   |
| EX-  |                       |  |  |   |  | 0.5<br>-<br>-  |                                  | SP   | SAND: fine to medium grained, uniform, yellow grey  | м   |                                      | MARINE  |
|  |                       |  |  |   |  | - 1.0<br>-<br>-  | <u>Nice dis</u>                  |  | 0.90m<br>TERMINATED AT 0.90 m<br>Target depth   |   |                                      |   |
|  |                       |  |  |   |  | -<br>- 1.5<br>-<br>-<br>-                                  |                                  |  |   |   |                                      |   |
|  |                       |  |  |   |  | -2.0   |                                  |  |   |   |                                      |   |
|  |                       |  |  |   |  | -2.5<br>-<br>-<br>-  |                                  |  |   |   |                                      |   |
|  |                       |  |  |   |  | -<br>3.0<br>-  |                                  |  |   |   |                                      |   |
|  |                       |  |  |   |  | -<br>-<br>3.5<br>-   |                                  |  |   |   |                                      |   |
| ,  |                       |  |  |   |  | -<br>-<br>- 4.0  |                                  |  |   |   |                                      |   |
|  |                       |  |  |   |  | -  |                                  |  |   |   |                                      |   |
|  |                       |  |  |   |  | - 4.0<br>-<br>-<br>-                                       |                                  |  |   |   |                                      |   |
| ME<br>EX<br>HA<br>PT<br>SO<br>AH<br>PS<br>AD<br>HF |                       | A<br>xcavato<br>ipper<br>and aug<br>ush tub-<br>onic dril<br>ir hammercussic<br>hort spin-<br>olid fligh-<br>olid fligh-<br>fligh-<br>olid fligh-<br>olid fligh-<br>olid fligh-<br>olid fligh-<br>olid fligh-<br>olid fligh-<br>olid fligh-<br>olid fligh-<br>fligh-<br>olid fligh-<br>fligh-<br>olid fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fligh-<br>fl | r bucke<br>ler<br>er<br>on sam<br>ral auge<br>tt auge<br>ght auge<br>e drillin | pler<br>er<br>r: V-Bit<br>:: TC-Bit<br>jer<br>g | PENETRATION<br>VE Very Easy (F<br>F Firm<br>H Hard<br>VH Very Hard (F<br>WATER<br>Shown<br>water in<br>water o | I<br>No Resista<br>Refusal)<br>Level on<br>Iflow<br>utflow | I<br>Ince)<br>Date               | F<br>S<br>H<br>D<br>P<br>M<br>P<br>N<br>P<br>V | Image: Light Standard Penetration Test     SAMPLES       IP - Standard Penetration Test     B     - Building       IP - Hand/Pocket Penetrometer     D     - District       IP - Dynamic Cone Penetrometer     U     - Thilding       IP - Perth Sand Penetrometer     U     - Thilding       IC - Moisture Content     MOISTURE       BT - Plate Bearing Test     D     - Drig       ID - Photoionisation Detector     W     - Weilding       S - Vane Shear; P=Peak,     LL     - Liq       R=Resdual (uncorrected kPa)     W     - Hit | k disturbe<br>turbed sa<br>vironment<br>n wall tub<br>ist<br>ist<br>stic limit<br>uid limit<br>isture cor | I<br>mple<br>al sample<br>e 'undistu | SOIL CONSISTENCY<br>VS - Very Soft<br>S - Soft<br>S - Soft<br>St - Stiff<br>VSt - Very Soft<br>VSt - Very Soft<br>H - Hard<br>RELATIVE DENSITY<br>VL - Very Loose<br>L - Loose<br>MD - Medium Dense<br>D - Dense<br>VD - Very Donse |
| Ref  | er to ex<br>reviatio  | planatory  | notes fo   | or details of<br>escriptions                    |  |  | CAR                              |  | NO (NSW/ACT) PTY LTD  |   |                                      | .,  |









# TAYLOR

**APPENDIX 13: DETAILED SITE INVESTIGATION** 

# Detailed Site Investigation

Kyeemagh Infants School, Corner of Jacobson Avenue and Beehag Street, Kyeemagh NSW

80818157

Prepared for DWP Australia Pty Ltd

23 January 2019





# **Contact Information**

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| Prepared for   | DWP Australia Pty Ltd   |
|----------------|---|
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| Job Reference  | 80818157  |
| Date           | 23 January 2019   |
| Version Number | Rev0  |

Author(s):

Alter

| Ben Withnall                   | Effective Date | 23/01/2019 |
|--------------------------------|----------------|------------|
| Environmental Scientist        |                |            |
| Approved By:                   |                |            |
| Robert Campbell                | Date Approved  | 23/01/2019 |
| Senior Environmental Scientist |                |            |

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| Version | Effective Date | Description of Revision   | Prepared by | Reviewed by |
|---------|----------------|---------------------------|-------------|-------------|
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| RevA    | 14/12/2018     | Draft for Client Review   | BW          | RC          |
| Rev0    | 23/01/2018     | Final Report              | BW          | RC          |
|         |                |                           |             |             |

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# **Executive Summary**

Cardno (NSW/ACT) Pty Ltd ("Cardno") was engaged by DWP Australia Pty Ltd ("the Client") to undertake a Detailed Site Investigation (DSI) for the proposed redevelopment of Kyeemagh Infants School, located on the corner of Jacobson Avenue and Beehag Street, Kyeemagh NSW 2216 ("the Site"). The Site is legally identified as Part Lot 1 within Deposited Plan (DP) 335734 and Lot 1 within DP 120095. The pre-school facility in the eastern portion of the Site is excluded from the scope of investigation. The DSI has been prepared in accordance with the scope of works presented in Cardno's proposal dated 29 November 2018.

The Department of Education is proposing to redevelop the Site to increase its current capacity from a K-2 capable school to a K-6 capable school. The purpose of the DSI was to assess soil and groundwater conditions at the Site with regards to potential contamination and Acid Sulfate Soils (ASS) in accordance with Item 12 of the Secretaries Environmental Assessment Requirements for Application Number SSD 9391.

The objective of the DSI was to investigate the potential for soil and groundwater contamination at the site which may pose a risk to human health or the environment under the proposed redevelopment as a primary school.

#### **Summary of Field Investigation**

Cardno conducted a field investigation which consisted of advancing 19 test pits, one hand auger and five boreholes across the site. Test pits were advanced a minimum of 0.5 m into natural soils. Boreholes were advanced to depths of up to 17 m within the proposed school building footprint, and depths of 5 m in other areas. Three boreholes were converted into permanent monitoring wells to establish groundwater conditions at the site.

The subsurface profile encountered generally consisted of topsoil and fill material consisting of sands and silty sands to a maximum depth of 1.2 metres below ground level (mBGL), with filling generally observed to be less than 1 m deep. Natural soils encountered generally consisted of sands and silty sands, with intermittent sandy clays present at greater depths. Groundwater was encountered at depths of approximately 3.8 to 4 mBGL.

#### **Summary of Contamination Potential**

Based on the site history and results of the intrusive investigation, the potential sources of impacts at the Site included:

- > Contamination as a consequence of uncontrolled fill material;
- > Contamination as a consequence of demolition of buildings containing hazardous building materials and soil impacts as a consequence of residual demolition waste
- > Presence of soil contamination as a consequence of historical spills and leaks

#### Summary of Results, CSM and Risk Assessment

#### Groundwater

Cardno installed and sampled three monitoring wells across the Site as part of the intrusive investigation. Concentrations of COPCs within groundwater were generally below the adopted assessment criteria with the exception of copper within MW02. Given that concentrations of copper within site soils were within acceptable criteria, and the urbanized nature of the site and surrounds, the concentrations are likely to be a function of regional groundwater quality rather than a site specific source. The potential risks from groundwater at the Site are considered low and acceptable.

#### Asbestos in Soils

ACM in the form of fibre cement debris was identified at the soil surface in two locations, beneath turf at TP03, and within shallow fill material at TP04, exceeding the adopted Health Screening Levels (HSLs) and NEPM guidance for continued use as a primary school. The potential area of impact is located in the eastern section of the Site, adjacent to the pre-school boundary fence. The fill material encountered within the area consists of sand and silty sand, with variable depths of between 0.3 and 1.2 mBGL.

Under the current site use, the risk posed to receptors by the soils is considered low. This is due to:

- > The material encountered being bonded fibre cement material in fair condition;
- > That no further material was encountered at the soil surface; and

> That control air monitoring during disturbance of the soils indicate airborne concentrations were below the exposure standard.

During the proposed development, disturbance of the soils poses a potential low inhalation risk to construction and maintenance workers, site users, and off-site receptors. An Asbestos Management Plan (AMP) should be developed to manage potential risks during construction.

Under the proposed site use, the soils will require remediation, management or risk assessment in order to render the site suitable. Options for remediation or management include consolidation of the material on-site beneath a suitable capping layer or hardstand, or removal from site and disposal at a suitably licenced landfill. If retention of the material on site is preferred, a Long Term Environmental Management Plan (LTEMP) shall be required.

It is Cardno's opinion that the identified impacts can be managed and remedied during development in order to render the site suitable.

#### Nickel and TRH C16-C34

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Concentrations of nickel were detected above the Tier I Site Specific Ecological Investigation Level (EIL) in shallow soils at two locations (TP06\_0.1 and TP13\_0.1), in addition, hydrocarbon fractions  $C_{16}$ - $C_{34}$  were detected at concentrations above the adopted Ecological Screening Level (ESL) in BH04\_0.4 for continued use as a primary school.

During development the area characterised by TP06 and TP13 is proposed to be beneath the school building, expanded carpark, or landscaped. The landscaping of the area is indicated to involve removal of surface soils and import of topsoil. The proposed works are likely to remove the nickel containing soils, or mitigate their contact with on-site vegetation. As such, the potential risk posed by the soils to sensitive receptors is considered low.

During development, the area characterised by TRH impacts identified at sample location BH04 is intended to remain as a hardstand area, with installation of subsurface water tanks and concrete slabs. The presence of hardstand is considered to effectively mitigate any potential exposure of ecological receptors to the soils containing hydrocarbons above the adopted screening criteria. As such, the potential risk posed by the soils is considered low.

It is Cardno's opinion that under the proposed development the identified impacts do not pose an unacceptable risk to environmental receptors, and any receptor pathways are likely to be mitigated during the planned redevelopment.

#### **Potential Acid Sulfate Soils**

Potential Acid Sulfate Soils (PASS) have been identified at depths of 7 mBGL and greater, associated with natural sands and clays. If these soils are to be disturbed and allowed to oxidise, the potential acid generation poses an environmental risk to ecological receptors such as on-site vegetation and off-site receptors via groundwater. The acid generated also has the potential to degrade structures installed. An Acid Sulfate Soils Management Plan (ASSMP) should be developed to manage the disturbance of these soils by activities such as excavation and piling, or by lowering of the water table.

#### Recommendations

To manage the potential risks at the Site and validate the suitability of the Site for the continued land use, some remediation, management or risk assessment of the site will be required. Based on the information above, Cardno provides the following recommendations:

- Develop a Remediation Action Plan (RAP) to evaluate the potential management, remediation and / or risk assessment options, detail additional soil sampling rates for data gap investigation, waste classification / re-use requirements and validation criteria to guide and inform the development works. Potential applicable remedial strategies that should be considered include but are not limited to:
  - Site specific human health and ecological risk assessment;
  - Excavation and off-site disposal of impacted soil;
  - Capping with material suitable for the development and future areas of vegetation (potentially 500 mm of clean soil or a suitable depth of hardstand);
- > The RAP should also include:

- An Unexpected Finds Protocol to manage any risks of unidentified impacts such as hazardous materials or waste in fill material;
- Sampling requirements to classify soil if off-site disposal of soils is required. A suitably qualified Environmental Consultant should be engaged a to undertake sampling at densities in accordance with the NSW EPA Sampling Design Guidelines (1995) and/or the NSW EPA Excavated Natural Material Order (2014) in order to issue a Waste Classification for the material;
- If re-use of excavated soils on-site is proposed, validation sampling at a rate consistent with NEPM and
  / or ENM Order guidance should be undertaken to ensure the soils are suitable for the proposed landuse. The sampling density would be included in the RAP.
- > If not incorporated into the RAP, additional management plans should be developed including:
  - An Acid Sulfate Soils Management Plan (ASSMP) detailing the procedure for disturbance of PASS material, and the process for treatment and validation of neutralisation;
  - An Asbestos Management Plan (AMP) detailing the procedure for disturbance of ACM containing soils including control measures and WHS requirements.

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#### **Abbreviations and Units**

| BTEXN | Benzene, Toluene, Ethyl-benzene, Xylenes and Naphthalene |
|-------|--|
| OCP   | Organochlorine Pesticides                                |
| OPP   | Organophosphate Pesticides                               |
| PAHs  | Polycyclic Aromatic Hydrocarbons                         |
| PCBs  | Polychlorinated Biphenyls                                |
| тос   | Total Organic Carbon                                     |
| ТРН   | Total Petroleum Hydrocarbons                             |
| TRH   | Total Recoverable Hydrocarbons                           |
| VOC   | Volatile Organic Compounds                               |

#### **Technical Terms**

| ACM    | Asbestos Containing Material                                    |
|--------|---|
| AGL    | Above Ground Level  |
| AHD    | Australian Height Datum   |
| AMG    | Australian Map Grid   |
| ANZECC | Australian and New Zealand Environment and Conservation Council |
| AST    | Aboveground Storage Tank  |
| BGL    | Below Ground Level  |
| CoC    | Chain of Custody  |
| CoPC   | Contaminants of Potential Concern                               |
| DECC   | Former Department of Environment and Climate Change NSW         |
| DECCW  | Former Department of Environment, Climate Change and Water      |
| DNAPL  | Dense Non-Aqueous Phase Liquid                                  |
| DO     | Dissolved Oxygen  |
| DSI    | Detailed Site Investigation                                     |
| EC     | Electrical Conductivity   |
| EILs   | Environmental Investigation Levels                              |
| EPA    | Environment Protection Authority                                |
| EPL    | Environment Protection Licence                                  |
| GCMS   | Gas Chromatograph - Mass Spectrometer                           |
| GME    | Groundwater Monitoring Event                                    |
| HILs   | Health based Investigation Levels                               |
| LNAPL  | Light Non-Aqueous Phase Liquid                                  |
| LOR    | Limit of Reporting  |
| N/A    | Not Applicable  |
| NAPL   | Non-Aqueous Phase Liquid  |
| NEPM   | National Environment Protection Measure                         |
|        |   |

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| OEH       | Office of Environment and Heritage   |
|-----------|--|
| рНғ/рНғох | Field pH and Field pH Peroxide Oxidation   |
| PID       | Photo-ionisation Detector  |
| PQL       | Practical Quantitation Limit   |
| PSI       | Preliminary Site Investigation   |
| QA        | Quality Assurance  |
| QC        | Quality Control  |
| RL        | Reduced Level  |
| RPD       | Relative Percentage Difference   |
| SCR       | Chromium Reducible Sulphur   |
| SPOCAS    | $\label{eq:suspension} Suspension\ \mbox{Peroxide}\ \mbox{Oxidation}\ \mbox{Combined}\ \mbox{Acidity}\ \mbox{and}\ \mbox{Sulphur}$ |
| UCL       | Upper confidence Limit   |
| UST       | Underground Storage Tank   |

#### Units

| На    | Hectares   |
|-------|--|
| mBGL  | Metres Below Ground Level                                |
| mg/kg | Milligram per Kilogram (approximately equivalent to ppm) |
| mg/L  | Milligram per Litre                                      |
| mBTOC | Metres Below Top of Casing                               |
| ppb   | Part per Billion   |
| ppm   | Parts per Million  |
| µg/kg | Microgram per Kilogram (approximately equivalent to ppb) |
| µg/L  | Microgram per Litre                                      |
| μS/cm | Micro Siemens per Centimetre                             |

# 1 Introduction

# 1.1 Background

Cardno (NSW/ACT) Pty Ltd ("Cardno") was engaged by DWP Australia Pty Ltd ("the Client") to undertake a Detailed Site Investigation (DSI) for the proposed redevelopment of Kyeemagh Infants School, located on the corner of Jacobson Avenue and Beehag Street, Kyeemagh NSW 2216 ("the Site"). The Site is legally identified as Part Lot 1 within Deposited Plan (DP) 335734 and Lot 1 within DP 120095. The pre-school facility in the eastern portion of the Site is excluded from the scope of investigation. The location and features of the site are presented in **Figures 1** and **2** in **Appendix A.** The DSI has been prepared in accordance with the scope of works presented in Cardno's proposal dated 29 November 2018.

The Department of Education is proposing to redevelop the Site to increase its current capacity from a K-2 capable school to a K-6 capable school. The proposed redevelopment has been assessed as State Significant Development and this DSI has been commissioned to satisfy Item 12.1 of the Secretary's Environmental Assessment Requirements (SEARS) for Application Number SSD 9391, issued under Section 4.12(8) of the *Environmental Planning and Assessment Act* and Schedule 2 of the *Environmental Planning and Assessment Act* and Schedule 2 of the *Environmental Planning and Assessment Act* are to assess and quantify any soil and groundwater contamination and demonstrate that the Site is suitable for the proposed use in accordance with *State Environmental Planning Policy No. 55 – Remediation of Land 1998*.

### 1.2 Purpose and Objectives

The purpose of this DSI is to provide the Client with information on subsurface soil and groundwater conditions at the Site with regards to potential contamination and Acid Sulfate Soils (ASS) which may pose a risk to human health or the environment under the proposed development.

The objectives of the DSI are to:

- > Identify the potential for past or present activities on the Site; and to the extent practicable surrounding the Site, to cause contamination of land or groundwater at the Site;
- > Identify potential areas and contaminants of concern at the Site;
- > Develop a Conceptual Site Model (CSM) incorporating identified impacts (if any) and potential receptors of concern to assess the potential for the protected beneficial uses of the land and groundwater to be impacted due to contamination; and
- Provide recommendations for additional assessment and/or management options if impacted soil and/or groundwater is identified.

### 1.3 Scope

To meet the DSI objectives Cardno undertook the following scope of work:

- > Defined the Site features and immediate surrounds based on site observations during the assessment activities;
- > Reviewed available background information for the Site, including searches of public databases;
- > Undertook an intrusive investigation which included:
  - Locating services in the assessment area;
  - The advancement of 19 test pits, one hand auger, and five soil borings using an excavator and 4x4 vehicle mounted Drill Techniques D-4T drill rig;
  - Submission of 41 primary soil samples, 37 samples for Acid Sulfate Soils analysis, two fibre cement samples and associated Quality Assurance / Quality Control samples to a NATA accredited laboratory for analysis of:
    - > Total Recoverable Hydrocarbons (TRH);
    - > Benzene, Toluene, Ethylbenzene, Total Xylenes and Naphthalene (BTEXN);

- > Volatile Organic Compounds (VOCs);
- > Polycyclic Aromatic Hydrocarbons (PAHs);
- > Heavy Metals (Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc);
- > Organochlorine and Organophosphate Pesticides;
- > Polychlorinated Biphenyls (PCBs);
- > Acid Sulfate Soils Field Screening (pHF/pHFOX);
- > Suspension Peroxide Oxidation Combined Acidity and Sulphur (SPOCAS);
- > Chromium Reducible Sulphur (S<sub>CR</sub>); and
- > Asbestos (weight/weight %).
- Submission of three primary groundwater samples and associated Quality Assurance / Quality Control samples to a NATA accredited laboratory for analysis of:
  - > Total Recoverable Hydrocarbons (TRH);
  - > Benzene, Toluene, Ethylbenzene, Total Xylenes and Naphthalene (BTEXN);
  - > Volatile Organic Compounds (VOCs);
  - > Polycyclic Aromatic Hydrocarbons (PAHs);
  - > Heavy Metals (Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc);
  - > 28 per- and poly-fluoroalkyl substances (PFAS)
- > Development of a conceptual site model (CSM) to evaluate potential risks to identified sensitive receivers;
- > Preparation of this DSI report.

### 1.4 Guidelines and Legislation

The scope of work outlined above was completed in accordance with the requirements included in the following guidelines and legislation:

- ASSMAC (1998) Acid Sulfate Soils Assessment Guidelines, Acid Sulfate Soils Management Advisory Committee, August 1998;
- > CCME (2010), Canadian soil quality guidelines: carcinogenic and other polycyclic aromatic hydrocarbons (PAHs) (environmental and human health effects), Scientific criteria document (revised), Canadian Council of Ministers for the Environment ,2010
- > CRC Care (2011) Technical Report No. 10 Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater Part 1: Technical Development Document, September 2011;
- > HEPA (2018) PFAS National Environmental Management Plan, January 2018;
- NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure (NEPM). National Environment Protection Council (NEPC) 1999, Amendment 2013;
- > NEPC (2013) Schedule B(2) Guideline on Site Characterisation, NEPM 1999, Amendment 2013;
- NSW Department of Urban Affairs and Planning (1998) Managing Land Contamination: Planning Guidelines: SEPP 55 Remediation of Land, 1998;
- NSW EPA (1995) Contaminated Sites Sampling Design Guidelines. New South Wales Environment Protection Authority (EPA), September 1995;
- NSW OEH (2011) Guidelines for Consultants Reporting on Contaminated Sites. New South Wales Office of Environment a& Heritage (OEH), November 1997, Reprinted September 2000, Reprinted August 2011;
- Standards Australia (2005) Australian Standard AS 4482.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds. Standards Australia, Homebush, NSW; and

Standards Australia (1999) Australian Standard AS 4482.2-1999 - Guide to the sampling and investigation of potentially contaminated soil. Part 2: Volatile substances. Standards Australia, Homebush, NSW.

# 2 Site Condition and Surrounding Environment

# 2.1 Site Definition

The site is approximately 8 km south west of the Sydney CBD. The site location and site plan are provided in **Appendix A** with site details presented below in **Table 2-1**.

| Item                       | Details  |
|----------------------------|--|
| Site Address               | Corner of Jacobson Avenue and Beehag Street, Kyeemagh NSW 2216 |
| Approximate Site Area (ha) | 1.3 ha   |
| Title Details              | Lot 1 DP 335734 and Lot 1 DP 120095                            |
| Local Government Area      | Bayside City Council   |
| Parish and County          | St George, Cumberland  |
| Current Site Owners        | The Department of Education                                    |
| Current Site Zoning        | R2 Low Density Residential                                     |

Table 2-1 Site Definition and Details

### 2.2 Site Description

The Site is currently used as an infant's school and has an area of approximately 1.3 ha. The land parcel is approximately rectangular in shape and is bounded by Jacobson Avenue to the South, Beehag Street to the west, and Tancred Avenue to the east. The northern boundary abuts low density residential housing. The western area of the Site contains the infant's school with classrooms, administrative buildings, amenities and recreation spaces. The centre of the site is primarily an open grassed play area. In the eastern area of the Site North Brighton Preschool occupies an approximately 1,700 m<sup>2</sup> area, which is excluded from the scope of investigation. Figures detailing the Site location and surrounds, and plans for the proposed development are included in **Appendix A**.

Cardno conducted a site inspection on 10 November 2018 during field works. Details of the observations made during the inspection are provided in **Table 2-2** below.

| Item                             | Observations  |
|----------------------------------|---|
| Current site use                 | Current site use is as an infants school  |
| Proposed site use                | Future site use is for redevelopment to remain as a primary school  |
| Site slope and drainage features | Site elevation is approximately 5 mAHD and is relatively level. Local topography is generally level with minor undulations and mounds. Drainage in surrounding streets is expected to be through a pit and pipe network via street guttering.   |
| Vicinity Surface water bodies    | The Cooks River is located approximately 240 m east north east of the Site,<br>Botany Bay is located approximately 240 m south east of the Site, and<br>Muddy Creek is located approximately 330 m north west of the Site. Muddy<br>Creek drains into the Cooks River, which flows to Botany Bay. |
| Site surface coverings           | The Site is mostly grassed, with areas of asphalt hardstand in play areas in<br>the south western area of the Site. A graveled carpark is present in the north<br>western corner of the Site accessed via Beehag Street.  |
| Surface soils                    | Surface soils were visible in areas of sparse grass cover and consisted of sands and silty sands.   |
|                                  | Eight buildings are present in the western area of the Site which comprise the infants school facilities. Buildings include;  |
| Buildings                        | <ul> <li>A demountable office and classroom building in the north adjacent the<br/>carpark</li> </ul>   |
|                                  | <ul> <li>A metal building housing the Sustainable Community Hub adjacent<br/>garden beds south of the office</li> </ul>   |

Table 2-2 Site Inspection Observations

|  | <ul> <li>A brick library building south west of the office</li> </ul>  |
|--|--|
|  | <ul> <li>A brick amenities building south of the office</li> </ul>   |
|  | <ul> <li>A clad classroom south of the Beehag Street entrance</li> </ul>   |
|  | <ul> <li>Two clad classroom buildings and a clad storage building adjacent the<br/>Jacobson Avenue boundary</li> </ul>   |
|  | The preschool facility contains additional buildings which are not included within the investigation area.   |
| Potential asbestos in building materials                           | Potential asbestos containing materials were observed in some buildings generally consisting of wall cladding to the buildings in the south adjacent to Jacobson Avenue.   |
| Manufacturing, industrial or chemical processes and infrastructure | None observed.   |
| Fuel storage tanks (USTs/ASTs)                                     | None observed.   |
| Dangerous goods  | None observed.   |
| Solid waste deposition   | None observed.   |
| Liquid waste disposal features                                     | None observed.   |
| Evidence of previous site<br>contamination investigations          | None observed.   |
| Evidence of land contamination (staining or odours)                | Fibre cement material was observed at the soil surface adjacent the access gate in the north eastern corner of the site ( <b>Figure 3, Appendix A</b> ).   |
| Evidence of groundwater contamination                              | None observed.   |
| Groundwater use  | A functioning groundwater bore is present on site reportedly used for irrigation.  |
| Vegetation   | Mature trees are present primarily in the western infant's school area, and<br>eastern pre-school area. The remainder of the Site is generally grassed or<br>hardstand. Although grass cover was sparse in some areas, vegetation was<br>generally observed to be healthy. Vegetation is mapped as Urban Exotic /<br>Native (Native Vegetation of the Sydney Metropolitan Area, OEH) |
| Site fencing   | The site is enclosed by a metal security fence on the eastern, western and southern boundaries, and a timber fence on the northern boundary.   |

# 2.3 Surrounding Land Uses

Land uses surrounding the site are detailed in **Table 2-3** and a map of the surrounds in shown in **Figure 1**, **Appendix A**.

| Table 2-3 S | Surrounding | Land | Uses |
|-------------|-------------|------|------|
|-------------|-------------|------|------|

| Direction | Land Use or Activity   |
|-----------|--|
| North     | Low density residential followed by Mutch Avenue, Kyeemagh RSL Club and Muddy Creek                |
| South     | Jacobson Avenue followed by low density residential, General Holmes Drive and Botany Bay           |
| East      | Tancred Avenue followed by low density residential and the Cooks River, followed by Sydney Airport |
| West      | Beehag Street followed by low density residential  |

The area is serviced by public roads and access to the site is available from Beehag Street to the west, and via a locked access way at the north eastern corner of the Site leading to Tancred Avenue.

# 2.4 Proposed Development

The proposed redevelopment aims to address demographic pressures identified in the Kogarah Primary Cluster by expanding the capacity of the school from a K-2 Infants School to K-6 primary school. The proposed school will have a capacity of up to 500 students. The redevelopment involves the demolition of all existing buildings in a staged process to allow the existing school to remain open. The concept design for the proposed development is included in **Appendix A**. New infrastructure includes;

- A main two storey building in the eastern area of the Site adjacent to the pre-school boundary, comprising the majority of the current grassed open area;
- > An administration building in the central southern area of the Site;
- > Hardstand and a hall building in the south west corner of the Site;
- > A games court and refurbished carpark in the north western area of the Site; and
- > Landscaping of the remainder of the Site.

# 2.5 Topography and Drainage

Site elevation is approximately 3 to 5 mAHD and is relatively level with a raised mound south of the Sustainable Community Hub. The local topography is generally flat with minor undulations and mounding. Surface water is expected to generally infiltrate into the sandy soils. Drainage in surrounding streets is by kerbside guttering. Likely stormwater discharge points are the Cooks River and Botany Bay.

### 2.6 Flood Potential

Cardno undertook a review of available flood mapping of the area surrounding the school in order to provide flooding advice (Cardno, 2018). The Cooks River Flood Study undertaken by Parsons Brinckerhoff for Sydney Water in 2008 indicates that the Site is unlikely to be affected by the 1% AEP or PMP flood events.

### 2.7 Regional Geology and Hydrogeology

The Soil Landscapes of Sydney Sydney 1:100,000 sheet indicates that the Site soils are likely comprised of Quaternary quartz sands with minor shell content, silt and fine sands (Qhbr). The NSW Office of Environment and Heritage eSPADE online GIS tool indicates that the site is characterised as part of the Tuggerah Soil Landscape, which is an Aeolian landscape with deep sandy soils with pH values ranging from 4.5 (strongly acidic) to 7.0 (neutral).

The site is underlain by the Botany Sands Aquifer which is extensive, porous and highly productive. Groundwater flow is expected to be to the east towards the Cooks River or south towards Botany Bay with local variations in gradient. Due to the proximity of the Site to Muddy Creek, the Cooks River and Botany Bay, groundwater at the Site may be tidally influenced.

#### 2.7.1 Groundwater Database

A search of the NSW Groundwater Database maintained by the Department of Primary industries – Water identified 88 bores within 500m of the site. The purpose of these bores are summarised in **Table 2-4** below.

There are reportedly two bores on-site, with one currently in use:

- GW023455: Private spear for general domestic use installed 01/12/1965. Drilled depth of 4.9mBGL (unlikely to be currently in use)
- GW109028: School bore for high security domestic recreation use installed on 02/12/2002. Drilled depth 8.0 mBGL. Static Water Level 6.0 mBGL (currently in use).
- Static water levels (SWLs) in nearby bores were measured at between 2.44 mBGL and 5.49 mBGL

Table 2-4 Groundwater Summary Table

| Intended Purpose | Number of Bores within 500 m |
|------------------|------------------------------|
| Domestic         | 81                           |
| Irrigation       | 6                            |
| Recreation       | 1                            |

The majority of groundwater extraction in the surrounding area is for domestic use, likely for garden irrigation.

#### 2.7.2 Acid Sulphate Soils

The Rockdale Local Environment Plan 2011 lists the Site as within a Class 4 Acid Sulfate Soils (ASS) potential area, with a Class 3 area present to the north. There is potential for ASS to be present beneath the Site, and works below 2 m below ground level (mBGL), or which may lower the water table by 2m may pose an environmental risk. As part of this DSI, an investigation into ASS beneath the Site has been undertaken. Some

potential indicators of ASS were identified during fieldworks (odour, shell inclusions), and analytical results confirm that Potential Acid Sulfate Soils (PASS) is present at the Site within sands and clays beneath the water table at depths of 7 mBGL and greater. An Acid Sulfate Soils Management Plan (ASSMP) should be developed for the project to manage any disturbance of ASS during works.

### 2.7.3 Salinity

There is no data on the Salinity Hazard Map generated using the NSW planning Portal, therefore the potential occurrence of saline soil conditions at the Site is considered to be low.

# 2.8 Previous Reports

Cardno was provided with the following previous reports relating to the Site:

- > Parsons Brinckerhoff (PB, 2014a) Asbestos Remediation Clearance Certificate. Prepared 9 July 2014.
- Parsons Brinckerhoff (PB, 2014b) Asbestos in Grounds, Asbestos Management Plan, Kyeemagh Infants School, Kyeemagh, NSW. Prepared July 2014.

#### 2.8.1 PB 2014a Asbestos Remediation Clearance Certificate

An Asbestos Remediation Clearance Certificate was issued by Parsons Brinckerhoff (PB) following removal of fragments of asbestos cement debris. The report states that on 9 July 2014 Australasian Technical Services Pty Ltd were engaged to remove asbestos cement debris from ground surfaces within a section of the school's grassy play area. The subject area of the report was in the south eastern corner of the Site abutting the preschool boundary fence and Jacobson Avenue boundary fence. Following removal works, the report states that visible materials were removed as far as reasonably practicable. The report excludes all other areas and areas below ground surfaces. Control air monitoring during the works was found to be within acceptable airborne fibre limits. A copy of the report is included within **Appendix C**.

2.8.2 PB 2014b Asbestos in Grounds, Asbestos Management Plan, Kyeemagh Infants School, Kyeemagh, NSW

Following the issue of the Asbestos Remediation Clearance Certificate (PB 2014a) an Asbestos Management Plan for *Asbestos In Grounds* was prepared by PB and issued in July 2014. The report outlines management measures for the identified asbestos impacted areas. The report states that the 'asbestos zone' comprises the PB 2014a subject area, and that asbestos cement fragments may be present as a component of buried fill in this area.

The report states that the site can be defined as low risk provided that the identified material remains undisturbed, and control measures such as regular monitoring and removal of fragments, and capping of the area with turf, mulch or hardstand is maintained.

Section 5 of the report provides a maintenance works management framework. Section 5.2 outlines that if the asbestos zone is to be disturbed, a licensed asbestos removal contractor with a friable licence should be engaged and provide appropriate control measures to ensure personnel and other school users are not exposed. Controls include undertaking works out of school hours, and work in progress asbestos air monitoring, analysed by a NATA accredited laboratory. Following works, management measures must be re-instated. A copy of the report is included within **Appendix C**.

### 2.9 EPA Records Search

#### 2.9.1 Contaminated Land Record of Notices

The Contaminated Land Record of Notices is maintained by the Office of Environment and Heritage (OEH) in accordance with Part 5 of the Contaminated Land Management (CLM) Act 1997 and contains regulatory notices issued by the Environment Protection Authority (EPA) in relation to contaminated sites. The results of a search of the register indicate there are two sites within a 1 km radius of the site which have been notified to the EPA.

| Site   | Address  | Activity        | Notices  | Distance (m)    | Direction             |
|--|--|-----------------|----------|-----------------|-----------------------|
| Shell Service<br>Station Brighton<br>Le Sands and<br>adjacent land | 2 General<br>Holmes Drive,<br>Brighton Le<br>Sands | Service Station | 4 former | 960 m from Site | South West of<br>Site |
| Cook Park  | General Holmes<br>Drive, Brighton<br>Le Sands      | Service Station | 6 former | 966 m from Site | South of Site         |

 Table 2-5
 Records of notice within dataset buffer

The potential for the notified sites identified to have impact at the Site is considered low due to the distance, and that they are not currently regulated.

#### 2.9.2 PoEO Public Register

The PoEO Public Register under Section 308 of the Protection of the Environment Operations (PoEO) Act 1997 contains Environment Protection Licences (EPLs), applications and notices issued by the EPA. A search for current licences to identify issues of relevance within a 1km radius zone did not return any active licences. A search for former licenced activities now revoked or surrendered returned six listings within the 1km buffer zone. The majority of these listings relate to general licences for application of herbicides, road construction (M5 Motorway) and water-based extractive activities. A summary of the former licences is contained in **Appendix C**.

The potential for the activities listed to have impact on the site is considered low due to the type of activities (herbicide impacts to waterways, road construction, extractive activities). The potential for diffuse effects will be considered if soil or groundwater impacts are identified.

#### 2.9.3 List of Contaminated Sites Notified to the EPA

In response to 2008 amendments to the *Contaminated Land Management Act* (2008) clarifying the Section 60 duty to report contaminated sites, the EPA has received approximately 1,600 notifications to date from owners or occupiers of sites where they believe the sites are contaminated. Sites appearing on this list indicate that the notifiers consider that the sites are contaminated and warrant reporting to the NSW EPA; however, the contamination may or may not be significant enough to warrant regulation by the NSW EPA. The EPA needs to review and, if necessary, obtain more information before it can make a determination as to whether the sites warrant regulation.

A search of the list of NSW Contaminated Sites identified 2 notified sites within a the 1km radius, listed in the Record of Notices. The results of the search are presented in **Table 2-6** below.

| Site   | Address  | Activity        | Management<br>Class   | Distance (m)    | Direction             |
|--|--|-----------------|---|-----------------|-----------------------|
| Shell Service<br>Station Brighton<br>Le Sands and<br>adjacent land | 2 General<br>Holmes Drive,<br>Brighton Le<br>Sands | Service Station | Contamination<br>formerly<br>regulated under<br>the CLM act | 960 m from Site | South West of<br>Site |
| Cook Park  | General Holmes<br>Drive, Brighton<br>Le Sands      | Service Station | Contamination<br>formerly<br>regulated under<br>the CLM act | 966 m from Site | South of Site         |

Table 2-6Records from the NSW EPA Contaminated Land list within buffer zone.

The potential for the notified sites identified to have impact at the Site is considered low due to the distance, and that contamination has been addressed.

#### 2.9.4 Underground Petroleum Storage Systems (UPSS)

A search of the UPSS Sensitive Zone dataset maintained by the NSW EPA indicates that the Site is considered to be within a UPSS Sensitive Zone. No evidence of a UPSS was identified at the Site. Results of the search are contained within **Appendix C**.

#### 2.9.5 EPA PFAS Investigation Program

A search of the NSW EPA PFAS Investigation Program dataset indicates that the Site is within 240 m of an EPA PFAS Investigation Program site, being Botany Bay and Georges River. Results of the search are contained within **Appendix C**.

### 2.10 SafeWork Dangerous Goods

A search of the SafeWork NSW records for the Storage of Schedule 11 Hazardous Chemicals was undertaken for the Site. The results of the search indicate that SafeWork NSW does not hold any records for the Storage of Hazardous Chemicals at the Site. A copy of the response is provided in **Appendix C**.

#### 2.11 Planning Information

The site is zoned as R2 Low Density Residential under the Rockdale LEP 2011.

### 2.12 Site Historical Uses

Historical Site uses and surrounding land uses observed from historical aerial photographs contained in **Appendix C** are summarised in **Table 2-7** below. Additionally, an article in the St George and Sutherland Shire Leader published in on August 14, 2017 titled '*Kyeemagh Infants School Turns 75*' reports that the school celebrated 75 years of operation in 2017, indicating the Site has been in use as a school since 1942.

A search of historical business directory records for the area surrounding the Site did not identify any listings of concern within proximity to the Site.

| Table 2-7 Historical Land Uses |
|--------------------------------|
|--------------------------------|

| Decade    | Site Use   | General Surrounding Land Use  |
|-----------|--|---|
| 1930-1943 | <ul> <li>An open undeveloped area, potentially<br/>grassed</li> </ul>  | <ul> <li>North: Open undeveloped area, potentially paddocks.</li> <li>South: Open undeveloped area, followed by a road.</li> <li>East: A road is present east of the Site, followed by an Open undeveloped area.</li> </ul>   |
| 1943-1951 | <ul> <li>A building is present in the south western corner of the site, and a smaller shed immediately north.</li> <li>The remainder of the site appears sparsely grassed / vegetated with some tracks.</li> <li>The western half of the site appears to be fenced.</li> </ul> | <ul> <li>North: Open area with some land disturbance / potential farming followed by a road. A house and sheds are present in the far north.</li> <li>West: Low density residential housing immediately west and market gardens to the north-west.</li> <li>East: low density residential housing. The current road structure surrounding the Site is in place.</li> <li>South: low density residential housing and roads.</li> </ul> |
| 1951-1955 | The Site remains generally unchanged   | <ul> <li>Surroundings remain generally unchanged</li> </ul>   |
| 1955-1961 | <ul> <li>The site has been cleared and additional<br/>small buildings are present in the south<br/>western corner. A building is now present<br/>abutting the centre of the northern site<br/>boundary.</li> </ul>   | <ul> <li>As above for south, east and west.</li> <li>North: The property abutting the northern site boundary has been developed, and appears to be paddocks or sporting greens.</li> </ul>  |
| 1961-1965 | <ul> <li>A building is present in the eastern area of<br/>the Site in the location of the current pre-<br/>school.</li> <li>Potential car parking is present along the<br/>northern site boundary.</li> </ul>  | <ul> <li>As above for south, east and west.</li> <li>North: the property abutting the northern site has been further developed with a large building present at the corner of Beehag Street and Mutch Avenue.</li> </ul>  |
| 1965-1982 | <ul> <li>The site remains relatively unchanged.<br/>Hardstand areas are visible between the<br/>buildings in the southern corner of the site.</li> <li>Some established trees are present.</li> </ul>  | <ul> <li>As above for south, east and west.</li> <li>The reserve adjacent the Cooks River to the north has been developed with a boat ramp.</li> </ul>  |

|                  | <ul> <li>The pre-school area is fenced as a<br/>separate area.</li> </ul>   |   |
|------------------|---|---|
| 1982-1991        | <ul> <li>The Site remains relatively unchanged. A<br/>small building is present similar to the<br/>current storage shed. One small building<br/>has also been removed.</li> </ul>   | <ul> <li>As above</li> </ul>  |
| 1991-2009        | <ul> <li>An additional building is present adjacent<br/>the Beehag Street boundary</li> <li>The building adjacent the northern site<br/>boundary has been removed</li> </ul>  | <ul> <li>As above for south, east, west.</li> <li>The former sporting / recreation facility abutting<br/>the northern boundary has been removed and<br/>redeveloped into low density housing</li> </ul> |
| 2009-<br>present | <ul> <li>The demountable office building is now present. The school and site layout resembles the current configuration with the addition of a shaded play area in the centre of the site.</li> <li>The Sustainable Community Hub was installed in 2017.</li> </ul> | <ul> <li>As above for north, east, west.</li> <li>Development of the reserve / Botany foreshore to the south.</li> </ul>  |

# 3 Data Quality Objectives

### 3.1 Data Quality Objectives

The NSW EPA (2017) Guidelines for the NSW Site Auditor Scheme (3rd Edition), which is endorsed under s105 of the Contaminated Land Management Act 1997, requires that Data Quality Objectives (DQOs) be prepared for all assessment and remediation programs. The DQO process as adopted by the NSW EPA is described within US EPA (2000) Guidance for the Data Quality Objectives Process and Data Quality Objectives Process for Hazardous Waste Site Investigations.

The DQOs for the site investigation, as detailed within NSW EPA (2006), are summarised in Error! Reference source not found..

| Table 3-1 | Data Quality Objectives |
|-----------|-------------------------|
|-----------|-------------------------|

| DQO Step                                 | Description   |  |  |
|--|---|--|--|
| Step 1<br>State the Problem              | The site is proposed for redevelopment and it is necessary to establish the current soil and groundwater quality at the site. Investigation into soils and groundwater with respect to potential risks to human health and the environment is required to determine if the Site is suitable for the proposed land use. Therefore, |  |  |
|  | 1. A DSI is required to assess the quality of site soils and groundwater, and to assess the potential risks posed to on and off-site receptors under the proposed land use.   |  |  |
|  | 2. If subsurface impacts are identified, appropriate remedial measures to make the site suitable cannot be identified until a DSI is completed.   |  |  |
| Step 2                                   | The decisions that must be made are:  |  |  |
| Identify the<br>Decisions                | 1. Are site soils suitable for the intended land use/s?   |  |  |
|  | 2. What is the risk posed to potential on-site (and off-site) receptors from the concentrations of COPCs identified at the site (if any)?   |  |  |
|  | 3. Is remediation or management of site soils necessary to ensure the site is made suitable for the intended land use?  |  |  |
| Step 3                                   | The primary inputs to the decisions described above are:  |  |  |
| Identify Inputs to the Decision          | <ol> <li>Assessment of soils, with samples collected from a minimum of 23 locations advanced<br/>across the site;</li> </ol>  |  |  |
|  | 2. Assessment of groundwater, with samples collected from three monitoring wells on site;   |  |  |
|  | <ol> <li>Ensuring a sufficient number of samples are collected, in accordance with regulatory<br/>guidelines, to characterise site soils and groundwater;</li> </ol>  |  |  |
|  | <ol> <li>Laboratory analysis of soil and groundwater samples for relevant COPCs, based on<br/>historical land use;</li> </ol>   |  |  |
|  | <ol> <li>Assessment of the analytical results against applicable guideline criteria, based on the<br/>intended land use/s;</li> </ol>   |  |  |
|  | <ol> <li>Assessment of the suitability of the analytical data obtained, against the Data Quality<br/>Indicators (DQIs) outlined below;</li> </ol>   |  |  |
|  | 7. Aesthetic observations of soils, including odours, staining and waste inclusions; and  |  |  |
|  | <ol> <li>Aesthetic observations of groundwater, including odours, sheen and light non aqueous<br/>phase liquids (LNAPL), if encountered.</li> </ol>   |  |  |
| Step 4<br>Define the Study<br>Boundaries | The study site is defined as Kyeemagh Infants School, being parts of Lot 1 DP 335734 and Lot 1 DP 120095.   |  |  |
|  | The lateral extent of the study is shown in <b>Figure 2</b> , and excludes the New Brighton Preschool.  |  |  |
|  | The vertical extent of the soil study extends to the maximum depth encountered as part of this investigation, being 16 mBGL for ASS investigation.  |  |  |
|  | The temporal extent of the study is limited to the sampling conducted in 2018.  |  |  |
| Step 5                                   | The decision rules for the DSI include:   |  |  |
| Develop a<br>Decision Rule               | <ul> <li>The number of soil sampling points will meet the requirements for a targeted site<br/>characterisation outlined in NSW EPA (1995) Sampling Design Guidelines;</li> </ul>   |  |  |

| DQO Step                                       | Description   |
|--|---|
|  | <ul> <li>The number of groundwater samples will be sufficient for site characterization;</li> </ul>   |
|  | <ul> <li>Primary, duplicate and triplicate soil and groundwater samples will be analysed at National<br/>Association of Testing Authorities, Australia (NATA) accredited laboratories;</li> </ul>   |
|  | <ul> <li>Field and laboratory QA/QC results will indicate reliability and representativeness of the data<br/>set;</li> </ul>  |
|  | <ul> <li>Laboratory Limits of Reporting (LORs) will be below the applicable guideline criteria for the<br/>analysed COPC, where possible;</li> </ul>  |
|  | <ul> <li>Applicable guideline criteria will be sourced from NEPM (2013) guidelines and other NSW<br/>EPA endorsed guidelines (as necessary);</li> </ul>   |
|  | <ul> <li>Any soil aesthetic issues will be evaluated including areas of discolouration, odour and<br/>hazardous waste inclusions;</li> </ul>  |
|  | <ul> <li>Any groundwater aesthetic issues will be evaluated including odours, sheen and LNAPL;</li> </ul>   |
|  | <ul> <li>If soil COPCs exceed the applicable guideline criteria, the site will be deemed to potentially<br/>contain 'hot spots' of contamination;</li> </ul>  |
|  | <ul> <li>If the concentration of a soil and groundwater COPC in a sample is below the applicable<br/>guideline criteria, then no further assessment/remediation will be required with respect to<br/>that COPC;</li> </ul>  |
|  | <ul> <li>If the 95% upper confidence limit (UCL) of a soil COPC is less than applicable guideline<br/>criteria, standard deviation is less than 50%, and no reported concentration is greater than<br/>250% of criteria, then no further assessment/remediation will be required with respect to that<br/>COPC; and</li> </ul>  |
|  | <ul> <li>If the concentration of a soil or groundwater COPC in a sample exceeds the applicable<br/>guideline criteria, the additional works (e.g. remediation or quantitative risk assessment) may<br/>be required to minimise the risk.</li> </ul>   |
| Step 6<br>Specify Limits on<br>Decision Errors | To ensure the results obtained are reproducible and accurate, a QA/QC plan is incorporated into the sampling and analytical program. DQIs are used to assess the reliability of field procedures and analytical results. In particular, the DQIs within NSW DEC (2006) are used to document and quantify compliance. DQIs are described as follows, and are presented in <b>Table 3-2</b> below:  |
|  | 1. Completeness – A measure of the amount of useable data from a data collection activity;  |
|  | <ol> <li>Comparability – The confidence (expressed qualitatively) that data may be considered to be<br/>equivalent for each sampling and analytical event;</li> </ol>   |
|  | <ol> <li>Representativeness – The confidence (expressed qualitatively) that data are representative<br/>of each media present on the site;</li> </ol>   |
|  | 4. Precision – A quantitative measure of the variability (or reproducibility) of data; and  |
|  | <ol> <li>Accuracy (bias) – A quantitative measure of the closeness of reported data to the true<br/>value.</li> </ol>   |
|  | In addition, this step should include the following considerations to quantify tolerable limits:  |
|  | <ul> <li>If 95% upper confidence limits (UCLs) are adopted for a particular soil COPC, a decision can<br/>be made based on a 95% probability that the 'true' arithmetic average contaminant<br/>concentration within the sampling area will not exceed the value determined by this method.<br/>Therefore, the limit on the decision error will be that there is a 5% probability that the calculated<br/>arithmetic average contaminant concentration may be incorrect; and</li> </ul> |
|  | <ul> <li>If the minimum soil sampling points required for site characterisation based on detected circular hot spots by using a systematic sampling pattern is adopted (Table A of NSW EPA 1995), a decision can be made based on a 95% confidence of detecting a hot spot of a particular diameter. Therefore, the limit on the decision error will be that there is a 5% probability that a hotspot of a particular diameter may not be detected.</li> </ul>                          |
| Step 7<br>Optimise the                         | To achieve the DQOs and DQIs, the following sampling procedures will be implemented to optimise the design for obtaining data   |
| Design for<br>Obtaining Data                   | 1. The number of soil sampling points will meet the requirements required for a targeted site characterisation outlined in Table A of NSW EPA (1995) <i>Sampling Design Guidelines</i>  |
|  | 2. Fill and natural soil samples will be collected from a minimum of 23 locations advanced at the site  |
|  | 3. Soil COPCs will be selected based on a review of historical activities at the site   |
|  | 4. Samples were be collected by suitably qualified and experienced environmental consultants  |
|  | 5. Soil samples will be collected and preserved in accordance with relevant standards/guidelines  |

| DQO Step | Description   |
|----------|---|
|          | 6. NATA accredited laboratories will be engaged for analysis of samples   |
|          | <ol> <li>Soil observations including odours, staining and PID readings will assist with selection of<br/>samples for laboratory analysis</li> </ol> |
|          | 8. Field and laboratory QA/QC procedures will be adopted and reviewed to indicate the reliability of the results obtained.                          |

# 3.2 Data Quality Indicators

The following Data Quality Indicators (DQIs), referenced in Step 6 in **Table 3-1** have been adopted in accordance with the NSW EPA (2017) Guidelines for the NSW Site Auditor Scheme (3rd Edition). The DQIs outlined in **Table 3-2** assist with decisions regarding the contamination status of the site, including the quality of the laboratory data obtained.

| Table 3-2 | Data Quality Indicators |
|-----------|-------------------------|
|-----------|-------------------------|

| DQI   | Frequency        | Data Acceptance Criteria   |
|---|------------------|--|
| Completeness  |                  |  |
| Field documentation correct   | All samples      | All samples  |
| Soil bore logs complete and correct   | All samples      | All samples  |
| Suitably qualified and experience sampler   | All samples      | All samples  |
| Appropriate lab methods and limits of reporting (LORs)  | All samples      | All samples  |
| Chain of custodies (COCs) completed appropriately   | All samples      | All samples  |
| Sample holding times complied with  | All samples      | All samples  |
| Proposed/critical locations sampled   | -                | Proposed/critical locations sampled  |
| Comparability   |                  |  |
| Consistent standard operating procedures for collection<br>of each sample. Samples should be collected, preserved<br>and handled in a consistent manner | All samples      | All samples  |
| Experienced sampler   | All samples      | All samples  |
| Climatic conditions (temp, rain etc) recorded and influence on samples quantified (if required)   | All samples      | All samples  |
| Consistent analytical methods, laboratories and units   | All samples      | All samples  |
| Representativeness  |                  |  |
| Sampling appropriate for media and analytes (appropriate collection, handling and storage)  | All samples      | All Samples  |
| Samples homogenous  | All samples      | All Samples  |
| Detection of laboratory artefacts, e.g. contamination blanks  | -                | Laboratory artefacts detected and assessed   |
| Samples extracted and analysed within holding times   | All samples      | -  |
| Precision   |                  |  |
| Blind duplicates (intra-laboratory duplicates)  | 1 per 20 samples | 30% RPD, then review<br>RPDs >30% would be reviewed in<br>relation to heterogeneity of sample<br>and LOR |
| Split duplicates (inter-laboratory duplicates)  | 1 per 20 samples | 30% RPD, then review   |



| DQI                   | Frequency        | Data Acceptance Criteria   |
|-----------------------|------------------|--|
|                       |                  | RPDs >30% would be reviewed in<br>relation to heterogeneity of sample<br>and LOR                   |
| Laboratory duplicates | 1 per 20 samples | <20% RPD Result > 20 × LOR<br><50% RPD Result 10-20 × LOR<br>No Limit when<br>RPD Result <10 × LOR |

#### Accuracy

| Trip blanks                | 1 per sampling<br>event (as required) | COPCs <lor< td=""></lor<> |
|----------------------------|---------------------------------------|---------------------------|
| Trip Spikes                | 1 per sampling<br>event (as required) | 70-130%                   |
| Surrogate spikes           | All organic samples                   | 50-150%                   |
| Matrix spikes              | 1 per 20 samples                      | 70-130%                   |
| Laboratory control samples | 1 per 20 samples                      | 70-130%                   |
| Method blanks              | 1 per 20 samples                      | <lor< td=""></lor<>       |

# 4 Soil Assessment Criteria

### 4.1 Assessment Criteria

The following sections detail the adopted Tier I Screening Values which are compared to the soil and groundwater analytical data included on the summary data tables included in **Appendix D**. The analytical results obtained have been compared to the assessment criteria below.

#### 4.1.1 Soil Assessment Criteria

Based on the proposed redevelopment as a primary school, the criteria for residential land use with accessible soils (A) have been applied. A review of the borehole logs for the site indicates that values for Sands / Coarse soils are applicable:

Assessment criteria for the Site were derived from the following guidelines:

- > Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, Xylene, and Naphthalene (BTEXN), Benzo(a)pyrene:
  - NEPM (2013) Health Screening Levels (HSLs) for Vapour Intrusion (VI) and Direct Contact;
  - CRC Care (2011) Soil HSLs for Intrusive Maintenance Workers (Shallow Trench).
  - NEPM (2013) Ecological Screening Levels (ESLs); and
  - CCME (2010) Soil Quality Guidelines (SQGs)
- Heavy metals M8 (Arsenic, Cadmium, Chromium, Copper, Lead, Nickel, Mercury, Zinc), Polycyclic Aromatic Hydrocarbons (PAHs), Organochlorine Pesticides, Organophosphorus Pesticides, Polychlorinated Biphenyls, Volatile Organic Compounds (VOCs):
  - NEPM (2013) Health Investigation Level (HILs);
  - NEPM (2013) Generic Ecological Investigation Levels (EILs);
  - Site Specific EILs where applicable calculated via the Ecological Investigation Level Calculation Spreadsheet, developed by CSIRO for the National Environment Protection Council, December 2010.
- > Asbestos:
  - Quantification % w/w, Presence / Absence.
- > Acid Sulfate Soils (ASS):
  - ASSMAC (1998) Action Criteria Coarse Soils (<1000t)

#### 4.1.2 Groundwater Assessment Criteria

For the purposes of evaluating groundwater conditions at the site, a review of the potential on-site and off-site groundwater beneficial uses have been conducted. The results of the review are provided in **Table 4-1** below.

| Deposition la la      |   | Likelihood of Use |           | Commont  |
|-----------------------|---|-------------------|-----------|--|
|                       | benencial Use   | Onsite            | Offsite   | Comment  |
| Aquatic<br>Ecosystems | Groundwater   | N/A               | Potential | Aquatic ecosystems are not present on-<br>site. There is potential for groundwater to<br>travel to aquatic ecosystems including<br>the Cooks River and Botany Bay.   |
|                       | Potable Water   | Unlikely          | Unlikely  |  |
| Human Uses            | Primary<br>/Secondary<br>Contact<br>Recreation /<br>Aesthetic | Unlikely          | Unlikely  | Groundwater use on-site and<br>surrounding the site is generally for<br>domestic use, likely irrigation. Potable<br>water supply is via reticulated water, and<br>stock watering is unlikely given the<br>surrounding land uses. |
|                       | Irrigation  | Likely            | Likely    |  |

#### Table 4-1 Groundwater Beneficial Uses

| Beneficial Use                   |                             | Likelihood of Use |               | Commont   |
|----------------------------------|-----------------------------|-------------------|---------------|---|
|                                  |                             | Onsite            | Offsite       | Comment   |
|                                  | Stock Watering              | Unlikely          | Unlikely      |   |
|                                  | Industrial Use              | Unlikely          | Unlikely      |   |
|                                  | Aquaculture                 | Unlikely          | Unlikely      |   |
| Buildings and                    | Structures                  | Refer Comment     | Refer Comment |   |
| Intrusive Maint<br>Excavation Wo | tenance / Trench /<br>orker | Potential         | Potential     | Groundwater may be encountered during trenching, excavation and piling works. |

Based on a review of the beneficial uses, the groundwater analytical results will be compared to applicable guideline criteria for protection of marine aquatic ecosystems, recreational use, and irrigation due to the onsite use for irrigation and potential flow towards the Cooks River and Botany Bay. As such, the groundwater analytical results will be compared to the following assessment criteria:

- > Heavy Metals, Benzene, Xylenes, Naphthalene, VOCs:
  - NEPM1999 Groundwater Investigation Levels (GILs) for marine waters (95%).
  - ANZECC 2000 Australian Water Quality Guidelines for Fresh and Marine Waters: Irrigation Long-Term Trigger Values.
- > TRH and BTEX:
  - NEPM Groundwater HSLs for vapour intrusion for low-high density residential land use (HSL A&B). A
    review of the depth to groundwater and excavation depth at the site indicates that the Sand HSLs at
    depths between 4 m to 8 m are applicable.
- > Per- and poly-fluoroalkyl substances (PFAS)
  - PFAS NEMP (2018) Interim Marine (95%) and Recreational Water.

# 5 Soil Investigation Program

# 5.1 Site Investigation Methodology

The scope and method of the work is summarised in **Table 5-1** below. Sampling locations are shown on **Figure 2**, **Appendix A** and collected samples and analysis are summarised in **Table 5-3**. Fieldwork was undertaken by an experienced Cardno environmental scientist and geotechnical engineer in accordance with the agreed scope of work per the procedures in **Table 5-1**, below. Laboratory analytical summary tables are included in **Appendix D** and borehole logs are provided in **Appendix E**.

In accordance with the PB 2014b Asbestos Management Plan, works were undertaken outside of school hours. During disturbance of the 'asbestos zone' adjacent the preschool, a licenced Class A asbestos removalist was engaged (Australasian Technical Services Pty Ltd). Work in progress air monitoring was undertaken by EnviroX Consulting, and a clearance certificate issued for the area disturbed following works. A copy of the clearance certificate is provided in **Appendix C**.

| Activity                           | Details   |
|------------------------------------|---|
| Dates of Field Activity            | 08/11/2018, 10/11/2018, 17/11/2018, 23/11/2018  |
| Service Location                   | Conducted a Dial Before You Dig search and engaged a qualified service locator to mark services and clear borehole locations prior to ground penetration.   |
| Intrusive Works                    | Non-destructive drilling (hand auger) within high risk zone followed by drilling using a 4x4 vehicle mounted Drill Techniques D-4T drill rig with solid flight augers and wash boring, and test pits using a 5t excavator.  |
| Bores, Test Pits and Target Depths | Fieldworks for soil sampling and monitoring well installation were undertaken on 10 and 17 November 2018:   |
|                                    | soils;  |
|                                    | <ul> <li>Five boreholes were drilled to varying depths between 5 mBGL and 17.95 mBGL</li> </ul>   |
|                                    | <ul> <li>Three boreholes were converted into permanent groundwater monitoring<br/>wells. Well construction details are included in Appendix E.</li> </ul>   |
|                                    | <ul> <li>After the monitoring wells were installed they were developed by pumping<br/>approximately 80 litres of groundwater from each well.</li> </ul>   |
| Soil Logging                       | Soils encountered during drilling were described and logged. Borehole logs are presented in <b>Appendix E.</b>  |
| Soil Sampling                      | A total of 41 primary soil samples, two fibre cement samples and 37 samples for ASS analysis were submitted for analysis from the 19 test pits, one hand auger and five boreholes advanced across the site excluding QA/QC samples. Samples were collected by gloved hand using nitrile gloves. Samples from test pits were collected from material that had not been in contact with the excavator bucket. Samples from boreholes were collected from the auger return. Samples at depth for ASS screening were collected from the Standard Penetration Test return.   |
|                                    | Samples for asbestos in soil were based on collecting 500mL of representative soil for each target interval for screening of asbestos content (% weight/weight)   |
|                                    | Primary soil samples and two intra-laboratory duplicated were analysed by Eurofins mgt for COPCs as per <b>Table 5-3</b> . Two triplicate samples were sent to ALS Environmental and analysed for the same COPCs.   |
| Groundwater Sampling               | Three primary groundwater samples, one intra-laboratory duplicate and one inter-laboratory triplicate sample were collected from the monitoring wells on 23 November 2018. The groundwater wells were developed as noted above and purged approximately one week later using low flow purging equipment with dedicated tubing. During purging, groundwater quality parameters including pH, dissolved oxygen, electrical conductivity, oxidation-reduction potential, and temperature were recorded. Groundwater was sampled once the water quality parameters stabilised. Groundwater purging logs are included in <b>Appendix D</b> . |

Table 5-1 Investigation Activity Summary

|  | The primary groundwater samples and intra-laboratory duplicate was sent to Eurofins mgt for analysis on the contaminants of potential concern (CoPC) as per <b>Table 5.2</b> . The triplicate groundwater sample was submitted to ALS for analysis of the same COPCs.  |
|--|--|
| Sample Preservation and Transport        | Samples were placed in laboratory supplied containers and stored on ice in an ice box while on Site and in transit to the laboratory under Chain of Custody (CoC) documentation. Samples for ASS screening and analysis were frozen prior to dispatch. CoC documentation is presented in <b>Appendix F</b> . |
| Borehole and Test Pit Re-<br>instatement | Boreholes and test pits for sampling were backfilled with soil removed from the bore during drilling where possible. Where additional backfill was required washed sand was used. Locations in grassed areas were capped with turf removed prior to drilling, or with new turf in the case of TP03.          |

The coordinates of the soil samples collected during the investigation program are included in **Table 5-2** below. A summary of the soil samples is included in **Table 5-2** below. Tabulated summaries of laboratory results are presented in **Appendix D**. Copies of the NATA stamped laboratory reports and chain of custody documentation are included in **Appendix F**. The Quality Assurance/Quality Control program is discussed in **Appendix G**.

| Table 5-2     Soil Sample Locations |  |  |  |  |  |  |  |
|-------------------------------------|--|--|--|--|--|--|--|
| Easting                             | Northing   | RL (m AHD)   |  |  |  |  |  |
| 330214.784390157                    | 6241985.38888958   | 3.482560902  |  |  |  |  |  |
| 330176.890083148                    | 6242025.4168091  | 4.603321871  |  |  |  |  |  |
| 330180.727843445                    | 6241985.26691309   | 3.829202915  |  |  |  |  |  |
| 330148.524206037                    | 6241928.78947002   | 4.380349699  |  |  |  |  |  |
| 330122.664385726                    | 6241978.06358734   | 4.555388904  |  |  |  |  |  |
| 330227.253574592                    | 6242029.99716608   | 3.652436884  |  |  |  |  |  |
| 330192.092346145                    | 6242039.0284916  | 4.402758435  |  |  |  |  |  |
| 330228.407901175                    | 6241971.87488026   | 3.532988047  |  |  |  |  |  |
| 330198.654486418                    | 6241996.98876323   | 3.769962181  |  |  |  |  |  |
| 330186.399446727                    | 6242012.08943301   | 3.887581294  |  |  |  |  |  |
| 330155.727611612                    | 6242007.80251647   | 4.442983868  |  |  |  |  |  |
| 330162.62287691                     | 6241997.83746968   | 4.288093089  |  |  |  |  |  |
| 330188.74141962                     | 6241968.68063922   | 3.758432115  |  |  |  |  |  |
| 330207.989146137                    | 6241962.19764201   | 3.525020347  |  |  |  |  |  |
| 330193.667881051                    | 6241942.11731322   | 3.710534554  |  |  |  |  |  |
| 330167.252254299                    | 6241958.12709222   | 4.61879868   |  |  |  |  |  |
| 330152.537040247                    | 6241973.13200167   | 4.271883799  |  |  |  |  |  |
| 330137.433438883                    | 6241991.72065215   | 4.542154508  |  |  |  |  |  |
| 330142.189179353                    | 6241959.19530421   | 4.911706657  |  |  |  |  |  |
| 330150.379169589                    | 6241948.33761529   | 4.99423734   |  |  |  |  |  |
| 330180.463340772                    | 6241928.57758081   | 4.508043814  |  |  |  |  |  |
| 330154.017918912                    | 6241906.03962298   | 6.364304828  |  |  |  |  |  |
| 330099.890302882                    | 6241951.4864973  | 5.418704539  |  |  |  |  |  |
| 330217.845050392                    | 6241986.92682675   | 3.463848467  |  |  |  |  |  |
| 330126.99801036                     | 6241934.95488447   | 5.356861049  |  |  |  |  |  |
|                                     | Easting           330214.784390157           330176.890083148           330180.727843445           330180.727843445           330148.524206037           330122.664385726           330227.253574592           330192.092346145           330192.092346145           330192.092346145           330192.092346145           330192.092346145           330192.092346145           330192.092346145           330192.092346145           330192.092346145           330192.092346145           330192.092346145           330192.092346145           330192.092346145           330192.092346145           330192.092346145           330193.657481051           330162.62287691           330162.62287691           330162.62287691           330162.62287691           330162.62287691           330167.252254299           330167.252254299           330137.433438883           330142.189179353           330142.189179353           330180.463340772           330154.017918912           330099.890302882           330126.99801036 | EastingNorthing330214.7843901576241985.38888958330176.8900831486242025.4168091330180.7278434456241985.26691309330148.5242060376241928.78947002330122.6643857266241978.06358734330227.2535745926242029.99716608330192.0923461456242039.0284916330228.4079011756241971.87488026330198.6544864186241996.98876323330162.622876916242007.80251647330162.622876916241997.83746968330193.6678810516241942.11731322330167.2522542996241942.11731322330155.770402476241942.11731322330137.433438836241991.72065215330142.1891793536241959.19530421330150.3791695896241928.57758081330154.0179189126241906.03962298330099.8903028826241986.92682675330126.998010366241934.95488447 |  |  |  |  |  |

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| · · · · · · · · · · · · · · · · · · · |            | ,  |
|---------------------------------------|------------|--|
| Sample ID                             | Date       | Laboratory Analysis  |
| TP01_0.2                              | 10/11/2018 | TRH/BTEXN/PAH/Metals 8/Asbestos (w/w%)   |
| TP01_0.9                              | 10/11/2018 | TRH/BTEXN/PAH/Metals 8   |
| TP02_0.1                              | 10/11/2018 | TRH/BTEXN/PAH/Metals 8/OCP/OPP/PCB/Asbestos (w/w%)                                     |
| TP02_0.4                              | 10/11/2018 | TRH/BTEXN/PAH/Metals 8/Asbestos (w/w%)   |
| TP03_ASB1                             | 10/11/2018 | Asbestos Presence / Absence  |
| TP03_0.2                              | 10/11/2018 | TRH/BTEXN/PAH/Metals 8/OCP/OPP/PCB/Asbestos (w/w%)                                     |
| TP03_1.2                              | 10/11/2018 | TRH/VOC/PAH/Metals (8)   |
| TP04_0.1                              | 10/11/2018 | TRH/BTEXN/PAH/Metals 8/OCP/OPP/PCB/Asbestos (w/w%)                                     |
| TP05_0.1                              | 10/11/2018 | TRH/BTEXN/PAH/Metals 8/Asbestos (w/w%)   |
| TP05_0.9                              | 10/11/2018 | TRH/VOC/PAH/Metals (8)/NEPM Screen for Soil Classification                             |
| TP06_0.1                              | 10/11/2018 | TRH/BTEXN/PAH/Metals 8/Asbestos (w/w%)   |
| TP06_0.3                              | 10/11/2018 | TRH/VOC/PAH/Metals (8)   |
| TP07_0.1                              | 10/11/2018 | TRH/BTEXN/PAH/Metals 8/Asbestos (w/w%)   |
| TP07_0.4                              | 10/11/2018 | TRH/BTEXN/PAH/Metals 8/NEPM Screen for Soil Classification                             |
| TP07_0.6                              | 10/11/2018 | TRH/BTEXN/PAH/Metals 8   |
| TP08_0.4                              | 10/11/2018 | TRH/VOC/PAH/Metals (8)   |
| TP09_0.3                              | 10/11/2018 | TRH/BTEXN/PAH/Metals 8/Asbestos (w/w%)   |
| TP10_0.1                              | 10/11/2018 | TRH/BTEXN/PAH/Metals 8   |
| TP11_0.2                              | 10/11/2018 | TRH/BTEXN/PAH/Metals 8/OCP/OPP/PCB/Asbestos (w/w%)                                     |
| TP11_1.2                              | 10/11/2018 | TRH/VOC/PAH/Metals (8)   |
| TP12_0.2                              | 10/11/2018 | TRH/BTEXN/PAH/Metals 8/OCP/OPP/PCB/Asbestos (w/w%)/NEPM Screen for Soil Classification |
| TP13_0.1                              | 17/11/2018 | TRH/BTEXN/PAH/Metals 8/OCP/OPP/PCB/Asbestos (w/w%)                                     |
| TP13_0.4                              | 17/11/2018 | Asbestos (w/w%)  |
| TP14_0.1                              | 17/11/2018 | Asbestos (w/w%)  |
| TP14_0.7                              | 17/11/2018 | TRH/VOC/PAH/Metals (8)   |
| TP15_0.1                              | 17/11/2018 | TRH/BTEXN/PAH/Metals 8   |
| TP15_0.6                              | 17/11/2018 | TRH/VOC/PAH/Metals (8)/OCP/OPP/PCB   |
| TP16_0.1                              | 17/11/2018 | TRH/BTEXN/PAH/Metals 8   |
| TP16_0.8                              | 17/11/2018 | TRH/VOC/PAH/Metals (8)   |
| TP17_0.5                              | 17/11/2018 | TRH/VOC/PAH/Metals (8)   |
| TP18_0.1                              | 17/11/2018 | TRH/VOC/PAH/Metals (8)/OCP/OPP/PCB   |
| TP18_0.4                              | 17/11/2018 | TRH/VOC/PAH/Metals (8)   |
| TP19_0.1                              | 10/11/2018 | TRH/BTEXN/PAH/Metals 8/Asbestos (w/w%)   |
| TP19_0.3                              | 10/11/2018 | TRH/BTEXN/PAH/Metals 8/Asbestos (w/w%)   |
| TP20_0.1                              | 17/11/2018 | TRH/BTEXN/PAH/Metals 8/OCP/OPP/PCB/Asbestos (w/w%)                                     |
| QA100                                 | 10/11/2018 | OCP/OPP/PCB/TRH/VOC/PAH/Metals (8)   |
| QA200                                 | 10/11/2018 | OCP/OPP/PCB/TRH/VOC/PAH/Metals (8)   |
| QA300                                 | 17/11/2018 | TRH/BTEXN/PAH/Metals 8   |
| QA400                                 | 17/11/2018 | TRH/BTEXN/PAH/Metals 8   |
| ASB2                                  | 17/11/2018 | Asbestos Presence / Absence  |

#### Table 5-3Summary of Soil Samples and Analysis

| BH01_1.0-1.45   | 10/11/2018 | pHF/pHFox/Scr/SPOCAS  |
|-----------------|------------|---|
| BH01_2.5-2.95   | 10/11/2018 | pHF/pHFox   |
| BH01_4.0-4.45   | 10/11/2018 | pHF/pHFox   |
| BH01_5.5-5.95   | 10/11/2018 | pH <sub>F</sub> /pH <sub>FOX</sub>                          |
| BH01_7.0-7.45   | 10/11/2018 | pHF/pHFOX   |
| BH01_8.5-8.95   | 10/11/2018 | pHF/pHF0x/Scr/SPOCAS  |
| BH01_10.0-10.45 | 10/11/2018 | pH <sub>F</sub> /pH <sub>FOX</sub> /S <sub>CR</sub> /SPOCAS |
| BH01_11.0-11.45 | 10/11/2018 | pH <sub>F</sub> /pH <sub>FOX</sub>                          |
| BH01_13.0-13.45 | 10/11/2018 | pH <sub>F</sub> /pH <sub>FOX</sub>                          |
| BH01_14.5-14.95 | 10/11/2018 | pH <sub>F</sub> /pH <sub>FOX</sub>                          |
| BH01_16.0-16.45 | 10/11/2018 | pH <sub>F</sub> /pH <sub>FOX</sub> /S <sub>CR</sub> /SPOCAS |
| BH02_0.5        | 17/11/2018 | TRH/BTEXN/PAH/Metals 8/Asbestos (w/w%)                      |
| BH02_1.0        | 17/11/2018 | TRH/VOC/PAH/Metals (8)                                      |
| BH02_2.0-2.45   | 17/11/2018 | pHF/pHFox   |
| BH02_4.0-4.45   | 17/11/2018 | pHF/pHFox/Scr/SPOCAS  |
| BH02_5.5-5.95   | 17/11/2018 | pHF/pHFOX   |
| BH02_7.0-7.45   | 17/11/2018 | pHF/pHF0x/Scr/SPOCAS  |
| BH02_8.5-8.95   | 17/11/2018 | pHF/pHFox   |
| BH02_10.0-10.45 | 17/11/2018 | pHF/pHFox   |
| BH02_11.5-11.95 | 17/11/2018 | pHF/pHF0x/SCR/SPOCAS  |
| BH02_13.0-13.45 | 17/11/2018 | pHF/pHFOX   |
| BH02_14.5-14.95 | 17/11/2018 | pHF/pHFOX   |
| BH02_16.0-16.45 | 17/11/2018 | pHF/pHFOX   |
| BH02_17.5-17.95 | 17/11/2018 | pHF/pHFOX   |
| BH03_0.5        | 17/11/2018 | TRH/BTEXN/PAH/Metals 8/Asbestos (w/w%)                      |
| BH03_1.0-1.1    | 17/11/2018 | pH <sub>F</sub> /pH <sub>FOX</sub>                          |
| BH03_2.5-2.95   | 17/11/2018 | pH <sub>F</sub> /pH <sub>FOX</sub>                          |
| BH03_4.0-4.45   | 17/11/2018 | pH <sub>F</sub> /pH <sub>FOX</sub>                          |
| BH03_5.5-5.95   | 17/11/2018 | pH <sub>F</sub> /pH <sub>FOX</sub>                          |
| BH03_7.0-7.45   | 17/11/2018 | pH <sub>F</sub> /pH <sub>FOX</sub>                          |
| BH03_8.5-8.95   | 17/11/2018 | pHF/pHF0X/SCR/SPOCAS  |
| BH03_10.0-10.45 | 17/11/2018 | pHF/pHFox/Scr/SPOCAS  |
| BH03_11.5-11.95 | 17/11/2018 | pHF/pHFox   |
| BH03_13.0-13.45 | 17/11/2018 | pHF/pHFox   |
| BH04_0.4        | 10/11/2018 | TRH/BTEXN/PAH/Metals 8                                      |
| BH04_0.5-0.95   | 10/11/2018 | pHF/pHFox/SCR/SPOCAS  |
| BH04_2.0-2.45   | 10/11/2018 | pHF/pHFox/Scr/SPOCAS  |
| BH04_3.0-3.45   | 10/11/2018 | pHF/pHFox   |
| BH05_0.2-0.5    | 10/11/2018 | TRH/VOC/PAH/Metals (8)                                      |
| BH05_1.5-1.95   | 10/11/2018 | pHF/pHF0x/Scr/SPOCAS  |
| BH05_3.0-3.45   | 10/11/2018 | pHF/pHFOX   |
| BH05_4.5-4.95   | 10/11/2018 | pHF/pHFOX   |

| Groundwater |            |   |
|-------------|------------|---|
| MW01        | 23/11/2018 | TRH/VOC/PAH/Metals (8)/28 PFAS including PFOA/PFOS  |
| MW02        | 23/11/2018 | TRH/VOC/PAH/Metals (8)/ 28 PFAS including PFOA/PFOS |
| MW03        | 23/11/2018 | TRH/VOC/PAH/Metals (8)/ 28 PFAS including PFOA/PFOS |
| QA100       | 23/11/2018 | TRH/VOC/PAH/Metals (8)/ 28 PFAS including PFOA/PFOS |
| QA200       | 23/11/2018 | TRH/VOC/PAH/Metals (8)/ 28 PFAS including PFOA/PFOS |

# 5.2 Field Observations

Subsurface conditions observed during the soil sampling program are summarised in **Table 5-4** below. Surface coverings primarily consist of grass, and asphalt in footpaths and hardstand areas. Depth profiles were generally consistent across the Site with some variation in fill depth and profile. Detailed soil descriptions are provided in the borehole logs (**Appendix E**).

|  | Table | 5-4 | Typical | Soil | Profile |
|--|-------|-----|---------|------|---------|
|--|-------|-----|---------|------|---------|

| Subsurface Horizon | Typical Depth<br>Range (mBGL) | Description   |
|--------------------|-------------------------------|---|
| Topsoil            | 0.0 – 0.2                     | Fine to medium grained Sands and Silty Sands  |
| Fill               | 0.2 – 0.5                     | Fine to medium grained Sands, Silty Sands and Gravelly Sands.<br>Sporadic areas of deeper fill observed in TP03 (1.2 mBGL).                                     |
| Residual Soil      | 0.5 – >17.0                   | Fine to medium grained Sands and Silty Sands. Areas of Silty and Sandy Clay observed in deeper boreholes; BH01 (7.38 mBGL), BH02 (8.5 mBGL) and BH03 (8.2 mBGL) |
| Rock               | -                             | Not encountered during investigation  |
| Groundwater        | ≈ 3.8 (mBTOC)                 | Pale Yellow, Low Turbidity  |

Additional observations for Kyeemagh Infants School include:

- > Asbestos Containing Material (ACM) in the form of fibre cement debris in fair condition was observed at the soil surface in two locations abutting the pre-school boundary fence in the east of the Site (ASB1 and ASB2 in Figure 3, Appendix A).
- > ACM in the form of fibre cement debris in fair condition was observed in two test pits. Debris was observed at TP03 at the soil surface beneath turf, and at TP04 within fill material.

# 5.3 Laboratory Soil Results

The results of laboratory analysis have been compared against the adopted assessment criteria. Summarised analytical results are presented in **Appendix D**. An interpretation of this data is summarised as follows:

- > Field Screen (PID):
  - PID readings ranged from 0.0 ppm to a maximum of 8.3 ppm at TP02\_0.4. Values observed were generally low between 0.5 and 5 ppm.
- > Benzene, Toluene, Ethylbenzene, and Xylene (BTEX):
  - Concentrations were not detected above the laboratory limits of reporting (LOR) or adopted criteria within the analysed samples.
- > Total Recoverable Hydrocarbons (TRH):
  - TRH fractions C<sub>6</sub> to C<sub>10</sub> and >C<sub>10</sub>-C<sub>16</sub> were not detected above the laboratory LOR or adopted criteria in any analysed sample.
  - TRH fractions >C<sub>16</sub> to C<sub>34</sub> were generally reported below the laboratory LOR and adopted criteria with the exception of the following:

- Concentrations of >C<sub>16</sub> to C<sub>34</sub> were detected above the adopted NEPM ESL (300 mg/kg) within samples BH04\_0.4 and TP06\_0.1. The maximum concentration detected was 1200 mg/kg at BH04\_0.4.
- A 95% Upper Confidence Limit (95% UCL) was undertaken for samples less than 2.5 times the ESL (excluding BH04\_0.4). The 95% UCL was calculated to be 123.8 mg/kg and a Standard Deviation of 53.5, below the adopted ESL.
- Concentrations of TRH fractions C<sub>34</sub> to C<sub>40</sub> were detected at concentrations above the laboratory LOR but below adopted criteria.
- > Metals:

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- Concentrations were generally reported above the laboratory LORs but below adopted criteria with the exception of the following:
  - Concentrations of nickel were detected above the Site Specific EIL (8 mg/kg) in samples TP01\_0.2, TP02\_0.1, TP02\_0.4, TP06\_0.1, TP06\_0.3 and TP13\_0.1. The maximum concentration detected was 130 mg/kg at TP06\_0.1;
  - A 95% UCL was calculated for sample concentrations less than 2.5 times the EIL (excluding samples TP06\_0.1 and TP13\_0.1), with a reported result of 6.93 and a Standard Deviation of 3.7, below the adopted EIL.
- > Polycyclic Aromatic Hydrocarbons (PAHs):
  - Concentrations were detected above the laboratory limits of reporting (LOR) but did not exceed adopted screening criteria.
- > Organophosphorus / Organochlorine Pesticides (OCPs/OPPs)
  - Concentrations of OCPs were detected above the laboratory LORs but below adopted criteria;
  - Concentrations of OPPs were not detected above the laboratory LOR or adopted criteria in any analysed sample.
- > Polychlorinated Biphenyls (PCBs):
  - Concentrations of PCBs were not detected above the laboratory LOR or adopted criteria in any analysed sample.
- > Asbestos:
  - Asbestos was generally not detected within analysed samples within the exception of the following:
    - Chrysotile asbestos was detected in fibre cement fragments above the adopted NEPM HSL (0.05% w/w) within sample TP04\_0.4 with an estimated concentration of 0.19% w/w;
    - Chrysotile asbestos was detected within fibre cement samples TP03\_ASB1 collected beneath turf, and ASB2 collected at the soil surface.
- > Acid Sulfate Soils:
  - Field pH (pH<sub>F</sub>) results ranged from 4.9 (acidic) to 9.6 (highly alkaline), indicating Actual ASS (AASS) are unlikely to be present;
  - Field pH Peroxide (pH<sub>FOX</sub>) results ranged from 2.3 (highly acidic) to 7.9 (slightly alkaline);
  - The results of subsequent SPOCAS and S<sub>CR</sub> testing revealed Potential Acid Sulfate Soils (PASS) were
    not likely to be present with the exception of the following:
    - Oxidisable Sulfur (as Chromium Reducible Sulfur) exceeded the adopted action criteria (0.03% S) in samples BH01\_8.5-8.95, BH01\_1.0-10.45, BH01\_16.0-16.45, BH02\_7.0-7.45, BH02\_11.5-11.95, BH03\_8.5-8.95, and BH03\_10.0-10.45;
    - In some cases, Acid Neutralising Capacity (ANC) in excess of the acid generation potential was observed, however samples BH01\_16.0-16.45 and BH03\_10.0-10.45 returned Net Acidity results above the action criteria of 0.3%S indicating the potential need for treatment if exposed.

 An indicative liming rate of up to 8.8 kg/tonne is likely to be required to neutralise any acid generating capacity within the soils.

| Analyte                              | Sample I.D.   | Reported Concentration  | Adopted Criteria   |
|--------------------------------------|---|---|--|
| TRH C <sub>16</sub> -C <sub>34</sub> | BH04_0.4  | 1,200 mg/kg   | NEPM ESL: 300 mg/kg  |
| Nickel                               | TP06_0.1<br>TP13_0.1  | 130 mg/kg<br>30 mg/kg   | Site Specific EIL: 8 mg/kg                                       |
| Asbestos (in soil)                   | TP04_0.4  | 0.19% w/w   | NEPM HSL: 0.01% w/w  |
| Asbestos (soil surface)              | TP03_ASB1<br>ASB2   | Chrysotile asbestos detected within fibre cement fragments          | NEPM: Soil surface to be free of asbestos                        |
| Potential Acid Sulfate<br>Soils      | BH01_8.5-8.95<br>BH01_10.0-10.45<br>BH01_16.0-16.45<br>BH02_7.0-7.45<br>BH02_11.5-11.95<br>BH03_8.5-8.95<br>BH03_10.0-10.45 | 0.34%S<br>0.16%S<br>0.05%S<br>0.13%S<br>0.082%S<br>0.29%S<br>0.35%S | Oxidisable Sulphur (S <sub>CR</sub> ) / Net<br>Acidity – 0.03% S |

#### Table 5-5 Summary of Soil Exceedances

### 5.4 Laboratory Groundwater Results

The results of laboratory analysis have been compared against the adopted assessment criteria and presented in **Appendix D**. An interpretation of this data is summarised as follows:

- > TRH:
  - Concentrations were not detected above laboratory LOR or the adopted assessment criteria in any analysed sample.
- > BTEX:
  - Concentrations were not detected above laboratory LOR or the adopted assessment criteria in any analysed sample.
- > PAHs:
  - Concentrations were not detected above laboratory LOR or the adopted assessment criteria in any analysed sample.
- > VOCs:
  - Concentrations were not detected above laboratory LOR or the adopted assessment criteria in any analysed sample.
- > Metals:
  - Concentrations were reported above the laboratory LOR but below adopted criteria with the exception
    of the following:
    - Concentrations of copper were detected marginally above the NEPM Marine 95% GILs (0.0013 mg/L) in sample MW02 (0.002 mg/L).
- > PFAS:
  - Concentrations were detected above the laboratory LOR but below the adopted assessment criteria.

 Table 5-6
 Summary of Groundwater Results Exceeding the Adopted Assessment Criteria

| Analyte | Sample ID | Reported Concentration (mg/L) | Reported Concentration (mg/L)       |
|---------|-----------|-------------------------------|-------------------------------------|
| Copper  | MW02      | 0.002 mg/L                    | NEPM GILs (Marine 95%): 0.0013 mg/L |

# 5.5 Site Hydrology

Table 5-7 Site Hydrology

| Component                             | Description  |
|---------------------------------------|--|
| Depth to Groundwater                  | SWL was recorded at between 3.8 and 3.9 mBTOC.   |
| LNAPL                                 | None observed  |
| Inferred Flow Direction               | East-south east towards Cooks River and Botany Bay with localized gradients in varying directions and potential tidal variation. |
| Inferred Aquifer Conductivity         | High   |
| Water Bearing Unit                    | Shallow sand aquifer   |
| Potential Groundwater Discharge Zones | The Cooks River (240 m east-north east), Botany Bay (240 m south east)   |

#### Table 5-8 Monitoring Well Construction

| Monitoring<br>Well ID | Installation Date | Total Depth<br>(mbgl) | Screening Interval<br>(mbgl) | Depth to water (bBTOC) |
|-----------------------|-------------------|-----------------------|------------------------------|------------------------|
| MW01 (BH05)           | 10/11/2018        | 4.72                  | 2.0-5.0                      | 3.87                   |
| MW02 (BH02)           | 17/11/2018        | 17.32                 | 2.0-5.0                      | 3.98                   |
| MW03 (BH01)           | 10/11/2018        | 14.47                 | 2.0-5.0                      | 3.85                   |

#### Table 5-9 Groundwater Purging Parameters

| Monitoring<br>Well ID | Dissolved<br>Oxygen<br>(DO)<br>(mg/L) | Electrical<br>conductivity<br>(EC) (µS/cm) | рН  | Redox<br>potential<br>(Eh) (mV) | Temp (°C) | Purge<br>volume (L) | Water<br>colour |
|-----------------------|---------------------------------------|--|-----|---------------------------------|-----------|---------------------|-----------------|
| MW01                  | 0.98                                  | 270  | 7.0 | 75.3                            | 19.9      | 8                   | Light Yellow    |
| MW02*                 | 0.7                                   | 331  | 6.9 | -41.2                           | 19.2      | 10                  | Light Yellow    |
| MW03                  | 0.56                                  | 214  | 6.5 | -127.4                          | 18.9      | 10                  | Light Yellow    |

 $^{\ast}\mbox{Purging}$  parameters are indicative only due to equipment malfunction during purging.
# 6 Quality Assurance / Quality Control

# 6.1 Field QA/QC Evaluation

The QA/QC samples collected for the sampling program are summarised in **Table 5-6**. The calculated Relative Percentile Differences between primary and duplicate / triplicate samples, trip blank, spike and rinsate results are presented in **Appendix D**.

| Sample Type Matrix             |       | Primary Sample | Duplicate I.D. | Triplicate I.D. |
|--------------------------------|-------|----------------|----------------|-----------------|
| Field Duplicate / Triplicate   | Soil  | TP12_0.2       | QA100          | QA200           |
| Field Duplicate / Thplicate    |       | TP16_0.1       | QA300          | QA400           |
| Field Duplicate / Triplicate   | Water | MW02           | QA100          | QA200           |
| Trip Blank / Trip Spike        | Soil  | TB / TS        | -              | -               |
| Rinsate Sample                 | Water | KYE_RIN        | -              | -               |
| Drilling fluid emulsion sample | Water | KYE_GUM        | -              | -               |

 Table 6-1
 Summary of Field QA/QC Samples

### 6.2 Laboratory QA/QC

In accordance with Cardno's Quality Assurance and Quality Control (QA/QC) procedures and AS4482.1 (2005), samples were stored in insulated transport containers containing ice and delivered to the designated laboratories under Chain of Custody documentation following sample collection. Chain of Custody records are included in **Appendix F**. Eurofins MGT and ALS Environmental, the chosen analytical laboratories, undertook internal QA/QC procedures which include the analysis of method blanks, internal duplicate samples, laboratory control samples, matrix spikes and surrogate recovery. Additionally, laboratory QA/QC procedures include sample receipt, logging, storage, preservation and analysis within the method specified holding time.

A review of the laboratory analytical data indicated that:

- > Laboratory analysis of samples was undertaken by a NATA accredited laboratory
- > The laboratory limits of reporting (LOR) were below the adopted criteria
- > Samples were extracted and analysed within holding times
- > Analyte percentage recoveries in surrogate samples were within acceptance limits
- > Analyte concentrations in laboratory method blanks were generally within acceptance limits
- Relative Percent Differences (RPD) between the laboratory parent samples and duplicate samples were generally within acceptance limits, some outliers exist for results for TRH C<sub>15</sub>-C<sub>28</sub>, TRH C<sub>29</sub>-C<sub>36</sub>, and C<sub>16</sub>-C<sub>34</sub>. These outliers are qualified as being within Eurofins and Cardno's overall acceptance requirements.
- > Analyte percentage recoveries in laboratory control samples were within acceptance limits
- > Analyte percentage recoveries in laboratory spikes were within acceptance limits.

### 6.3 Data Useability

The data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the conditions at the sample locations and that the analytical data can be relied upon for the purpose of these investigative works. It is concluded that overall the quality of the analytical data produced is reliable for the purposes of making decisions regarding site contamination.

# 7 Indicative Waste Classification

The soils sampled during the investigation were compared to the NSW EPA's *Waste Classification Guidelines* (2014). Analytical summary tables are presented within **Appendix D**. The findings of the indicative waste classification are as follows.

# 7.1 Area Excluding TP03 and TP04

Fill material and soils encountered from depths of 0.0 mBGL to a maximum depth of 1.0 mBGL, excluding the area surrounding TP03 and TP04 generally meet the requirements for classification as General Solid Waste (non-putrescible). The following should be noted:

- One sample (BH4\_0.4) exceeded the Contaminant Threshold 1 (CT1) criteria for benzo(a)pyrene (0.8 mg/kg) with a reported concentration of 0.9 mg/kg. However, a 95% Upper Confidence Limit calculated for the fill unit indicates an overall concentration of 0.53 mg/kg with a Standard Deviation of 0.07, below the CT1 criteria.
- One sample (BH06\_0.1) exceeded the CT1 criteria for nickel (40 mg/kg) and chromium (100 mg/kg) with concentrations of 130 mg/kg. A 95% UCL was calculated for the fill unit, with a reported chromium result of 22.9 mg/kg with a Standard Deviation of 19.9, and nickel result of 29.7 mg/kg with a Standard Deviation of 23.1, both below the CT1 criteria.

The UCL calculations are provided in **Appendix D**. During construction, it is recommended that Toxicity Characteristic Leaching Procedure (TCLP) testing is undertaken for nickel and chromium as part of the waste classification exercise to determine the final classification of the material.

# 7.2 Area Characterised by TP03 and TP04

Fill material encountered from depths of 0.0 mBGL to a maximum depth of 1.2 mBGL surrounding TP03 and TP04 and extending to BH02 generally meet the requirements for classification as Special Waste – Asbestos (mixed with General Solid Waste) due to the presence of asbestos at TP03, TP04 and at the soil surface.

# 7.3 Natural Soils

Natural soils at depths of 7 mBGL and greater are considered to be classified as PASS, and require management if they are to be disturbed. The soils will require treatment to neutralise any acid generating potential. Following treatment, validation sampling by a suitably qualified Environmental Consultant to confirm the neutralisation process and chemical concentrations will be required to produce a Waste Classification Certificate for the material.

For natural soils above the water table, sampling in accordance with the NSW EPA *Excavated Natural Material Order* (2014) can be considered following removal of identified impacted fill material to determine whether the soils meet the criteria for resource recovery under the NSW EPA *Excavated Natural Material Exemption* (2014).

# 7.4 Potential for On-Site Re-Use

The soils sampled during the investigation generally meet the requirements for re-use within the Site with specific exceptions and stipulations as described in the following section. General conditions for the re-use of within the Site include:

- > The soils should meet aesthetic guidelines for use near surface and not exhibit waste or deleterious inclusions, discolouration or generate odour;
- A management plan should be developed addressing any health and safety issues associated with disturbing soils containing COPCs such as asbestos;
- The soils must meet the geotechnical requirements for the particular use, as stipulated and verified by a qualified Geotechnical Engineer;
- > Use of the soils at shallow depths within the root zones of plants is subject to their acceptability as a growth medium; and
- > During development, a soil validation sampling program should be undertaken of excavated soils for re-use at sampling densities in keeping with NEPM guidance.

Subject to the above, the following should be considered for re-use of material on-site:

- Soils exceeding Tier I HSLs for asbestos surrounding TP03 and TP04 may require management. This may include placement of the material beneath hardstand or a capping layer which physically separates the material from sensitive receptors. If the material is to be retained on-site, a Long Term Environmental Management Plan (LTEMP) may be required.
- Soils exceeding Tier I EILs / ESLs for nickel and TRH C<sub>16</sub>-C<sub>34</sub> may require management if to be re-used on site. This may include placement of the material beneath hardstand or a capping layer which physically separates the material from sensitive receptors. If the material is to be retained on-site, a Long Term Environmental Management Plan (LTEMP) may be required.
- Soils found to be PASS will require treatment to neutralise any acid generating potential, followed by validation sampling by a suitably qualified Environmental Consultant to confirm the neutralisation process and chemical concentrations in order for the material to be considered suitable for re-use on-site.

# 8 Conceptual Site Model

### 8.1 Conceptual Site Model

Generally, a conceptual site model (CSM) provides an assessment of the fate and transport of COPCs relative to site specific, subsurface conditions with regard to their potential risk to human health and the environment. The CSM takes into account site specific factors including:

- > Source(s) of contamination
- > Identification of COPCs associated with past (and present) source(s)
- > Vertical, lateral and temporal distribution of COPCs
- > Site specific lithological information including soil type(s), depth to groundwater, effective porosity, and groundwater flow velocity and
- > Actual or potential receptors considering both current and future land use both for the site and adjacent properties, and any sensitive ecological receptors.

Based on the information sourced in this report, a CSM has been developed and is outlined in **Table 8-1**, below. Additional details are included in the sections that follow as necessary.

| Conceptual Site Model Element | Description  |
|-------------------------------|--|
| Contamination Sources         | <ul> <li>Based on the results of investigation undertaken, the sources of subsurface contamination include:</li> <li>Contamination as a consequence of uncontrolled fill material</li> <li>Contamination as a consequence of demolition of buildings containing hazardous building materials and soil impacts as a consequence of residual demolition waste</li> <li>Presence of soil contamination as a consequence of historical spills and leaks</li> </ul>   |
| Site Current and Future Use   | Current site use is as an infant's school. Future site is as a primary school.   |
| Site Geology                  | Medium to fine grain marine sand with podsols.   |
| Site Hydrogeology             | The Botany Sand Aquifer is present beneath the site. The SWL of groundwater at the Site measured from installed bores is 3.8 to 3.9 mBGL.  |
| COPCs - Soil                  | <ul> <li>The following COPCs have been identified above adopted Tier I screening criteria at the Site:</li> <li>Concentrations of asbestos have been detected within soils above the adopted NEPM HSL, and fragments have been identified at the soil surface;</li> <li>Concentrations of nickel have been detected above the adopted Site Specific EIL;</li> <li>Concentrations of hydrocarbons (TRH C<sub>16</sub>-C<sub>34</sub>) have been identified above the adopted NEPM ESL.</li> </ul>   |
| Extent of Impacts - Soil      | Concentrations of TRH C <sub>16</sub> -C <sub>34</sub> were detected above the adopted ESL in shallow soils at BH04. The vertical extent of impact is considered to be the depth of fill material, being 0.5 mBGL. The lateral extent has conservatively been estimated as the distance to the nearest clean location, with an indicative area of 1,500 m <sup>2</sup> . Concentrations of nickel were detected in surface soils above the adopted EIL in shallow surface soils. The vertical extent of impact is considered to be the depth of fill, being 0.3 to 0.4 mBGL. The lateral extent has conservatively been estimated as the distance to the nearest clean location, with an indicative area of 1,300 m <sup>2</sup> . Concentrations of asbestos in soil exceeding the adopted HSL were detected at TP04 within shallow fill, and at the soil surface at TP03 and south east of BH02. The vertical extent of impact is considered to be the depth of fill, which varies between 0.3 mBGL at BH01 and 1.2 mBGL at TP03. The lateral extent |

 Table 8-1
 Conceptual Site Model (CSM)

|                                   | of impact has been conservatively estimated as the distance to the nearest clean location, with an indicative area of 2,200 $m^2\!.$   |
|-----------------------------------|--|
| COPCs – Groundwater               | Copper was detected slightly above the NEPM GILs for marine waters in MW02 (0.002 mg/L).   |
| Extent of Impacts - Groundwater   | Given concentrations of copper within Site soils were within acceptable criteria,<br>and the urbanized nature of the site and surrounds, the concentrations are<br>likely to be a function of regional groundwater quality rather than a result of site<br>contamination. Given the distance to the nearest receiving body, and the low<br>levels detected, the potential risks from groundwater at the Site are considered<br>low and acceptable. |
| Potential Human Receptors         | Current and future users of the site, including students, staff, construction and maintenance workers.   |
| Potential Environmental Receptors | On-site vegetation communities, and off-site receptors including aquatic communities in the Cooks River and Botany Bay.  |

# 8.2 Conceptual Site Model Summary and Risk Assessment

The following sections summarise the Conceptual Site Model and an evaluation of potential risks to human and environmental receptors. Consideration should be given to any data gaps or uncertainties described in **Section 8.3** below.

### 8.2.1 Asbestos in Soils

ACM in the form of fibre cement debris was identified at the soil surface in two locations, beneath turf at TP03, and within shallow fill material at TP04. The potential area of impact is located in the eastern section of the Site, adjacent to the pre-school boundary fence. The fill material encountered within the area consists of sand and silty sand, with variable depths of between 0.3 and 1.2 mBGL.

Concentrations of asbestos in soil exceeded the adopted human health screening criteria, indicating a potential human health risk via inhalation pathways and will require some level of remediation, management or risk assessment in order to render the site suitable for the proposed land use.

Under the current site use, potential receptors include students, staff and maintenance workers. Given that the material encountered consisted of fibre cement debris, and that no further surface debris was observed other than material sampled, the current risk to receptors is considered to be low. In addition, control air monitoring undertaken during disturbance of the area indicated airborne concentrations were below the exposure standard.

During the proposed development, disturbance of the soils poses a potential low inhalation risk to construction and maintenance workers, site users, and off-site receptors. An Asbestos Management Plan (AMP) should be developed to manage potential risks during construction.

Under the proposed site use, the soils will require remediation, management or risk assessment in order to render the site suitable. Options for remediation or management include consolidation of the material on-site beneath a suitable capping layer or hardstand, or removal from site and disposal at a suitably licenced landfill. If retention of the material on site is preferred, a Long Term Environmental Management Plan (LTEMP) may be required. Given that the area of impact is generally located within the footprint of the proposed future school building, it is likely that some excavation and disposal of soils will be required.

It is Cardno's opinion that the identified impacts can be managed and remedied during development in order to render the site suitable.

### 8.2.2 Nickel and TRH C<sub>16</sub>-C<sub>34</sub>

Concentrations of nickel were detected above the Tier I Site Specific EIL in shallow soils at two locations (TP06\_0.1 and TP13\_0.1), in addition, hydrocarbon fractions  $C_{16}$ - $C_{34}$  were detected at concentrations above the adopted ESL in BH04\_0.4 for continued use as a primary school. Potential ecological receptors include on-site vegetation, and off-site receptors such as the Cooks River and Botany Bay.

The risk to groundwater and off-site receptors is considered low and acceptable due to the relatively immobile nature of the contaminants identified, and that concentrations within groundwater sampled at the Site were below the adopted screening criteria.

During development the area characterised by TP06 and TP13 is proposed to be beneath the school building, expanded carpark, or landscaped. The landscaping of the area is indicated to involve removal of surface soils

and import of topsoil. The proposed works are likely to remove the nickel containing soils, or mitigate their contact with on-site vegetation. As such, the potential risk posed by the soils to sensitive receptors is considered low.

During development, the area characterised by BH04 is intended to remain as a hardstand area, with installation of subsurface water tanks and concrete slabs. The presence of hardstand is considered to effectively mitigate any potential exposure of ecological receptors to the soils containing TRH above the adopted screening criteria. As such, the potential risk posed by the soils is considered low.

If the proposed development plans change and the areas above are intended to be vegetated, consideration should be given to; placing the soils beneath hardstand, at a depth of 2 mBGL or greater, or removal from site.

It is Cardno's opinion that under the proposed development the identified impacts do not pose an unacceptable risk to environmental receptors, and any receptor pathways are likely to be mitigated during the planned redevelopment.

### 8.2.3 Potential Acid Sulfate Soils

Potential Acid Sulfate Soils (PASS) have been identified at depths of 7 mBGL and greater, associated with natural sands and clays. If these soils are to be disturbed and allowed to oxidise, the potential acid generation poses an environmental risk to ecological receptors such as on-site vegetation and off-site receptors via groundwater. The acid generated also has the potential to degrade structures installed. An Acid Sulfate Soils Management Plan (ASSMP) should be developed to manage the disturbance of these soils by activities such as excavation and piling, or by lowering of the water table.

### 8.3 Data Gaps and Uncertainties

The results of the soil sampling program conducted at the Site showed that that measurable COPCs are generally absent from the shallow soils except for the areas identified above. Should previously unidentified areas of soil impacts be discovered during future phases of work at the Site, or sensitive receptors identified, additional investigation may be required.

Given the presence of fill on the site, there is likely to be some variability in the quality and type of the fill. Due to the discrete nature of ACM in soil, there is potential for ACM to be present in other areas. An Unexpected Finds Protocol should be employed to manage any previously unidentified areas of potential contamination.

Due to the Site being a functioning school, investigation was not able to undertaken within the building footprint of structures. As such there is some uncertainty as to subsurface conditions beneath buildings. During further phases of work if these soils are to be disturbed, a data gap investigation should be undertaken to ensure any potential risks are characterised.

These data gaps are not considered significant when making overall conclusions about the potential risks at the Site and can be remedied / managed under future phases of the proposed development.

# 9 Conclusions and Recommendations

### 9.1 Conclusions

Cardno has completed a Detailed Site Investigation (DSI) and Acid Sulfate Soils Investigation for Kyeemagh Infants School, corner of Jacobson Avenue and Beehag Street, Kyeemagh NSW. The purpose of the DSI was to assess soil and groundwater at the Site with regards to potential contamination and ASS in accordance with Item 12 of the Secretaries Environmental Assessment Requirements for Application Number SSD 9391.

The objective of the DSI was to investigate the potential for soil and groundwater contamination at the site which may pose a risk to human health or the environment under the proposed redevelopment as a primary school.

### 9.1.1 Summary of Contamination Potential

Based on the site history and results of the intrusive investigation, the potential sources of impacts at the Site included:

- > Contamination as a consequence of uncontrolled fill material;
- > Contamination as a consequence of demolition of buildings containing hazardous building materials and soil impacts as a consequence of residual demolition waste
- > Presence of soil contamination as a consequence of historical spills and leaks

### 9.1.2 Summary of Results, CSM and Risk Assessment

### 9.1.2.1 Groundwater

Cardno installed and sampled three monitoring wells across the Site as part of the intrusive investigation. Concentrations of COPCs within groundwater were generally below the adopted assessment criteria with the exception of copper within MW02. Given that concentrations of copper within site soils were within acceptable criteria, and the urbanized nature of the site and surrounds, the concentrations are likely to be a function of regional groundwater quality rather than a site specific source. The potential risks from groundwater at the Site are considered low and acceptable.

### 9.1.2.2 Asbestos in Soils

ACM in the form of fibre cement debris was identified at the soil surface in two locations, beneath turf at TP03, and within shallow fill material at TP04, exceeding the adopted HSLs for continued use as a primary school. The potential area of impact is located in the eastern section of the Site, adjacent to the pre-school boundary fence. The fill material encountered within the area consists of sand and silty sand, with variable depths of between 0.3 and 1.2 mBGL.

Under the current site use, the risk posed to receptors by the soils is considered low. This is due to:

- > The material encountered being bonded fibre cement material in fair condition;
- > That no further material was encountered at the soil surface; and
- > That control air monitoring during disturbance of the soils indicate airborne concentrations were below the exposure standard.

During the proposed development, disturbance of the soils poses a potential low inhalation risk to construction and maintenance workers, site users, and off-site receptors. An Asbestos Management Plan should be developed to manage potential risks during construction.

Under the proposed site use, the soils will require remediation, management or risk assessment in order to render the site suitable. Options for remediation or management include consolidation of the material on-site beneath a suitable capping layer or hardstand, or removal from site and disposal at a suitably licenced landfill. If retention of the material on site is preferred, a Long Term Environmental Management Plan (LTEMP) may be required.

It is Cardno's opinion that the identified impacts can be managed and remedied during development in order to render the site suitable.

### 9.1.2.3 Nickel and TRH C<sub>16</sub>-C<sub>34</sub>

Concentrations of nickel were detected above the Tier I Site Specific EIL in shallow soils at two locations (TP06\_0.1 and TP13\_0.1), in addition, hydrocarbon fractions  $C_{16}$ - $C_{34}$  were detected at concentrations above the adopted ESL in BH04\_0.4 for continued use as a primary school.

During development the area characterised by TP06 and TP13 is proposed to be beneath the school building, expanded carpark, or landscaped. The landscaping of the area is indicated to involve removal of surface soils and import of topsoil. The proposed works are likely to remove the nickel containing soils, or mitigate their contact with on-site vegetation. As such, the potential risk posed by the soils to sensitive receptors is considered low.

During development, the area characterised by BH04 is intended to remain as a hardstand area, with installation of subsurface water tanks and concrete slabs. The presence of hardstand is considered to effectively mitigate any potential exposure of ecological receptors to the soils containing TRH above the adopted screening criteria. As such, the potential risk posed by the soils is considered low.

It is Cardno's opinion that under the proposed development the identified impacts do not pose an unacceptable risk to environmental receptors, and any receptor pathways are likely to be mitigated during the planned redevelopment.

### 9.1.3 **Potential Acid Sulfate Soils**

Potential Acid Sulfate Soils (PASS) have been identified at depths of 7 mBGL and greater, associated with natural sands and clays. If these soils are to be disturbed and allowed to oxidise, the potential acid generation poses an environmental risk to ecological receptors such as on-site vegetation and off-site receptors via groundwater. The acid generated also has the potential to degrade structures installed. An Acid Sulfate Soils Management Plan (ASSMP) should be developed to manage the disturbance of these soils by activities such as excavation and piling, or by lowering of the water table.

### 9.2 Recommendations

To manage the potential risks at the Site and validate the suitability of the Site for the continued land use, some remediation, management or risk assessment of the site will be required. Based on the information above, Cardno provides the following recommendations:

- > Develop a Remediation Action Plan (RAP) to evaluate the potential management, remediation and / or risk assessment options, detail additional soil sampling rates for data gap investigation, waste classification / re-use requirements and validation criteria to guide and inform the development works. Potential applicable remedial strategies that should be considered include but are not limited to:
  - Site specific human health and ecological risk assessment;
  - Excavation and off-site disposal of impacted soil;
  - Capping with material suitable for the development and future areas of vegetation (potentially 500 mm of clean soil or a suitable depth of hardstand);
- > The RAP should also include:
  - An Unexpected Finds Protocol to manage any risks of unidentified impacts such as hazardous materials or waste in fill material;
  - Sampling requirements to classify soil if off-site disposal of soils is required. A suitably qualified Environmental Consultant should be engaged a to undertake sampling at densities in accordance with the NSW EPA Sampling Design Guidelines (1995) and/or the NSW EPA Excavated Natural Material Order (2014) in order to issue a Waste Classification for the material;
  - If re-use of excavated soils on-site is proposed, validation sampling at a rate consistent with NEPM and
    / or ENM Order guidance should be undertaken to ensure the soils are suitable for the proposed landuse. The sampling density would be included in the RAP.
- > If not incorporated into the RAP, additional management plans should be developed including:
  - An Acid Sulfate Soils Management Plan (ASSMP) detailing the procedure for disturbance of PASS material, and the process for treatment and validation of neutralisation;
  - An Asbestos Management Plan (AMP) detailing the procedure for disturbance of ACM containing soils including control measures and WHS requirements.

# 10 References

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NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure (NEPM). National Environment Protection Council (NEPC) 1999, Amendment 2013;

NEPC (2013) Schedule B(2) Guideline on Site Characterisation, NEPM 1999, Amendment 2013;

NSW Department of Urban Affairs and Planning (1998) *Managing Land Contamination: Planning Guidelines: SEPP 55 Remediation of Land*, 1998;

NSW EPA (1995) *Contaminated Sites Sampling Design Guidelines*. New South Wales Environment Protection Authority (EPA), September 1995;

NSW OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites.* New South Wales Office of Environment a& Heritage (OEH), November 1997, Reprinted September 2000, Reprinted August 2011;

Parsons Brinckerhoff (PB, 2014a) Asbestos Remediation Clearance Certificate. Prepared 9 July 2014.

Parsons Brinckerhoff (PB, 2014b) Asbestos in Grounds, Asbestos Management Plan, Kyeemagh Infants School, Kyeemagh, NSW. Prepared July 2014.

Standards Australia (2005) Australian Standard AS 4482.1-2005 – Guide to the investigation and sampling of sites with potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds. Standards Australia, Homebush, NSW; and

Standards Australia (1999) Australian Standard AS 4482.2-1999 - Guide to the sampling and investigation of potentially contaminated soil. Part 2: Volatile substances. Standards Australia, Homebush, NSW.

# 11 Limitations

This assessment has been undertaken in general accordance with the current "industry standards" for a DSI for the purpose and objectives and scope identified in this report. These standards are set out in:

- National Environment Protection [Assessment of Site Contamination] Measure (NEPM), December 1999, National Environment Protection Council (NEPC).
- National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999 (NEPC, 1999) as varied May 2013 (the 'NEPM').
- > AS4482.1- 2005: Guide to the sampling and investigation of potentially contaminated soil Part 1: Nonvolatile and semi-volatile compounds. Standards Australia (2005).

The agreed scope of this assessment has been limited for the current purposes of the Client. The assessment may not identify contamination occurring in all areas of the site, or occurring after sampling was conducted. Subsurface conditions may vary considerably away from the sample locations where information has been obtained.

This Document has been provided by Cardno subject to the following limitations:

- > This Document has been prepared for the particular purpose outlined in Cardno's proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.
- > The scope and the period of Cardno's services are as described in Cardno's proposal, and are subject to restrictions and limitations. Cardno did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Cardno in regards to it.
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- In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Cardno's opinions are based upon information that existed at the time of the production of the Document. It is understood that the services provided allowed Cardno to form no more than an opinion of the actual conditions of the site at the time this Document was prepared and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.
- > Any assessments made in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Document.
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This assessment report is not any of the following:

- > A Site Audit Report or Site Audit Statement as defined under the Contaminated Land Management Act, 1997.
- > A geotechnical report and the bore logs or test pit logs may not be sufficient as the basis for geotechnical advice.
- > A detailed hydrogeological assessment in conformance with NSW DEC (2007) Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination.



# FIGURES







# Kyeemagh **Infants School**

INTRUSIVE LOCATIONS





# APPENDIX

# SITE PHOTOGRAPHS





**Photograph 1:** Site view, facing west from Jacobson avenue boundary, showing grassed open playing area and school infrastructure.



Photograph 2: Site view of school infrastructure, hardstand and BH04 location, facing east.



**Photograph 3**: Site view towards BH02 location showing the north site boundary abutting residential properties, the pre-school area, and access gate to Tancred Avenue.



Photograph 4: Clad buildings adjacent to Jacobson Avenue with potential ACM wall linings.





**Photograph 5**: TP12 location showing shallow fill and topsoil profile over sands within the open grassed area.



Photograph 6: TP10 location showing shallow topsoil profile over sands adjacent Jacobson Avenue.



**Photograph 7**: ABS2 location adjacent TP19 showing representative fibre cement fragments containing chrysotile asbestos at the soil surface.

# APPENDIX



# SUPPORTING DOCUMENTS



# Asbestos in Grounds, Asbestos Management Plan, Kyeemagh Infants School, Kyeemagh, NSW

July 2014

**NSW Public Works** 



Parsons Brinckerhoff Australia Pty Limited ABN 80 078 004 798

Level 27, Ernst & Young Centre 680 George Street Sydney NSW 2000 GPO Box 5394 Sydney NSW 2001 Australia Telephone +61 2 9272 5100 Facsimile +61 2 9272 5101 Email <u>Sydney @pb.com.au</u>

Certified to ISO 9001, ISO 14001, AS/NZS 4801 A GRI Rating: Sustainability Report 2011

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| Author:      | Lamice Ali  |
|--------------|-------------|
| Signed:      |             |
| Reviewer:    | Warren Lal  |
| Signed:      | Muhl        |
| Approved by: | Jason North |
| Signed:      |             |



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Appendix A Grounds management checklist

# 1. Introduction

# 1.1 Document Review

No Activity and/or no Re-occurrence of ACM in grounds on this site since July 2014, as such the following is recommended:

This document is to be reviewed and updated

- when works occur on site
- when works occur on site which may cause grounds disturbance
- when any ACM in grounds is reported
- every second year, if no activity.
- until ten years of inactivity, when document review and update will occur every five years

# 1.2 Background

In July 2014, asbestos cement fragments were identified in the eastern section of the grassy field to the day care building, at Kyeemagh Infants School, located on the corner of Jacobson Avenue & Beehag St, Kyeemagh NSW 2216.

In order to manage the risk of exposure to asbestos, any fibrous cement fragments are to be removed from the ground surfaces (Refer to Section 1.3). The areas where fibrous cement fragments have been identified within the fill material (and further in-situ asbestos fragments may be present) have been designated as "asbestos zones".

This report outlines the plan for management of the identified asbestos impacted areas (zones), and should be read in conjunction with the existing Department of Education and Communities (DEC) Asbestos Management Plan for all other identified asbestos materials within the school.

# 1.3 Asbestos removal/clean-up works

The asbestos removal/ clean up works completed in 2014 comprised:

 the removal, clean-up and disposal of the visible fragments of fibrous cement on the ground surface. Removal was limited to the accessible surface areas only.

The remediated areas are shown in Figure 1.



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# 2. Asbestos materials

# 2.1 Asbestos zone locations

Asbestos cement fragments may be present as a component of buried fill within the asbestos zone areas. Refer to Figure 1 site plan.

Based on guidelines provided by WorkCover NSW 'Managing Asbestos in and on Soil 2014', as well as DEC's 'Asbestos Management Plan for Schools and Colleges 2014', a licenced asbestos assessor should be engaged to determine whether the asbestos within the Asbestos Zones is considered non-friable or friable.

# 2.2 Risk management

The in-situ asbestos within the asbestos zones can be classified as low risk provided that the following measures are undertaken:

- The control measures installed are fully maintained.
- The in-situ asbestos remains undisturbed.
- An asbestos management plan remains in effect.
- Any works undertaken on or near the asbestos zones are to be under the control of a permit to work where the contractor has acknowledged the presence of asbestos and has prepared a safe work method statement(s) to ensure that asbestos is not disturbed and therefore airborne asbestos fibres are not generated.



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# 3. Asbestos register (Grounds)

Table 3-1 outlines the findings of the inspection of the grounds indicating the areas requiring management.

| Event    | Location  | Description of<br>Material                                  | Extent                                     | Condition | Risk<br>Status | Control<br>Priority | Control Recommendation/Comments  |
|----------|---|---|--|-----------|----------------|---------------------|--|
| School C | Grassy field to<br>day care building,<br>extending from<br>school boundary<br>fence to Jacobson<br>Ave, to large tree<br>to building G. | Material<br>Possible buried<br>asbestos cement<br>fragments | Throughout<br>– below<br>ground<br>surface | Unknown   | Status         | Low                 | The area should be regularly monitored for<br>any fragments and a record kept of how many<br>are found and at what frequency. Fragments<br>should be collected and disposed of as<br>asbestos waste.<br>Consideration should be given to the repair of<br>surface coverage using turf, fake turf,<br>hardstand, or a thick mulch layer as<br>appropriate cover which will prevent heavy<br>foot traffic damage and reduce erosion<br>caused by water runoff. |
|          |   |   |  |           |                |                     |  |

| Table 3-1         Asbestos Register – Asbestos zones only for | Kyeemagh Infants School |
|---|-------------------------|
|---|-------------------------|

\*Refer to Figure 1 for detail of area locations

### **Risk assessment factors**

Low risk: Asbestos materials that pose a low health risk to personnel, employees and the general public provided they remain undisturbed.

Medium risk: Asbestos materials that pose a moderate risk to people in the area – there is a medium potential for the material to release asbestos fibres, if disturbed.

High risk: Asbestos materials that pose a high health risk to personnel or the public in the area of the material – there is a high potential for the material to release asbestos fibres, if disturbed.



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# 4. Asbestos zone routine management

# 4.1 Inspections by local staff

In order to monitor the effectiveness of the on-site asbestos zone management, it is essential that the affected areas are regularly inspected. Visual inspections of the asbestos remedial measures should be carried out to ensure that they are maintained adequately. Such inspections should occur on the following occasions:

- at three monthly intervals (e.g. a walkover of remediated areas to ensure that applications of mulch and turf, etc. have been maintained)
- after a period of prolonged heavy rain (e.g. a walkover of remediated areas to ensure that applications of mulch and turf, etc. have not been disturbed by heavy rain)
- whenever damage or disturbance has been reported (e.g. a walkover of remediated areas to ensure that applications of mulch and turf, etc. have not been disturbed by events such as vehicle movements).
- whenever works are about to commence that may cause grounds disturbance

Should areas be identified where encapsulating measures appear to be damaged or are no longer effective, these areas should be re-covered immediately. Some remedial measures such as the installation of layers of mulch and top soil will require ongoing maintenance to ensure that a sufficient barrier layer is in place.

# 4.2 Maintenance

All remediation measures carried out in the affected areas must be maintained as per their original application. In particular:

- All surface cover/treatments within the asbestos zones must be fully maintained at all times. For example, mulch levels should remain as per their original application, turf should be maintained to ensure full coverage and any other measures should be maintained in a good condition.
- All hard standing surfaces must be maintained and re-instated should any works that disturb them be carried out.
- If any portion of an affected area is found to be damaged (i.e. the surface cover has been damaged so that it has resulted or may result in the soil becoming exposed), the DEC local Asset Management Unit (AMU) should be contacted immediately.



# 4.3 Checklist

A checklist of site management requirements is presented in Appendix A of this document. This checklist should be used whenever walkover inspections are carried out and where maintenance issues have been raised. The checklist is specific to the requirements of the grounds at the Kyeemagh Infants School and sets out the frequency of inspections required. It is recommended that a hard copy of the checklist retained by the school and field copies are taken on-site when required.



# 5. Asbestos zone maintenance works management

# 5.1 General

An Asbestos Management Plan (AMP) has been implemented for all NSW state schools and educational facilities. The plan includes procedures for managing friable asbestos and working on asbestos. A generic permit to work template will also be included in the management plan which will be able to be used where any work is required that may disturb asbestos materials within an asbestos zone.

# 5.2 Sub-soil areas within school grounds

- Any contractor, maintenance person; all Department of Commerce, Department of Education & Communities personnel or other authorised persons must acknowledge the presence of buried asbestos cement materials within these areas. A copy of the asbestos register must be made available to any such person prior to commencing work.
- Any contractor, maintenance person; all Department of Commerce, Department of Education & Communities or other authorised person who may potentially disturb the soil surface must complete a permit to work or similar form that ensures that any work will not disturb the buried asbestos.
- If work is to be carried out in grounds that will disturb or potentially disturb the buried asbestos, the contractor, maintenance person; all Department of Commerce, Department of Education & Communities personnel or other authorised person must engage a licensed asbestos removal contractor with a friable asbestos licence to undertake the work. The licensed contractor should prepare a safe work method statement detailing procedures that ensure that personnel working in the asbestos zones and any other persons within the school will not be exposed to asbestos fibres. The work area must be completely enclosed and work undertaken out of school hours.
- Work in progress asbestos air monitoring should be carried out during any work that disturbs or could potentially disturb the buried asbestos and/or the soil surface. Air-monitoring should be in accordance with the National Occupational Health & Safety Commission's Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC: 3003 (2005)] and be conducted by National Association of testing Authorities (NATA) accredited personnel operating from a NATA registered laboratory.
- All asbestos management measures originally installed must be re-instated at the completion of work and prior to the removal of the work area enclosure.



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# 6. Permit for work

Any contractor who proposes to work in any of the asbestos zones where asbestos may be disturbed or the ground surface may be broken must complete a permit to work form.

Before a permit to work is issued, individuals will be required to read and understand the AMP, as well as copies of the relevant asbestos registers. Individuals must be aware of their legal obligations in relation to health and safety as specified in the Work Health and Safety Act 2011 and the Work Health and Safety Regulation 2011.

Permits to work are designed to ensure appropriate work practices are employed in the vicinity of asbestos-containing materials/products. The permit to work will document what asbestos is to be removed, encapsulated or otherwise protected, prior to the contracted maintenance or building works proceeding. The permit to work will also indicate whether other requirements, such as the use of personal protective equipment (PPE), the installation of barricading and/or airborne fibre monitoring, are necessary.

When the work is completed, or the permit to work expires (whichever occurs first), the permit shall be signed and returned to the DEC Facility Manager for cancellation after that Manager has checked a safe situation exists.

The DEC local AMU shall be advised immediately of any incidents of non-compliance with the AMP.

Based on guidelines provided by WorkCover NSW 'Managing Asbestos in and on Soil 2014', as well as DEC's 'Asbestos Management Plan for Schools and Colleges 2014', a licenced asbestos assessor should be engaged to determine whether the buried asbestos is considered *non-friable* or *friable*. Therefore, any fibrous cement materials or other suspected asbestos-containing materials excavated should be inspected by a licenced asbestos assessor to determine if it's friable. This means that any such asbestos should be worked on only by contractors with an appropriate asbestos licence and a project specific permit issued by WorkCover NSW (in addition to the permit to work, mentioned above).



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## 7. Legislative requirements

The following legislative requirements will apply to asbestos zone maintenance works:

- All asbestos removal and disposal work shall be carried out in accordance with the requirements of the WorkCover NSW Guidelines for Licensed Asbestos Removal Contractors
- The asbestos contractor shall notify WorkCover NSW of the proposed work at least 5 days prior to the commencement of any work in accordance with NSW Occupational Health and Safety Regulation 2011. However this time period may be waived in the case for DEC properties
- All work shall be carried out in strict accordance with the NSW Work Health and Safety Act 2011, the NSW Work Health and Safety Regulation 2011, How to Safely Remove Asbestos – Code of Practice 2011, and the Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres, 2nd Edition [NOHSC 3003 (2005)].



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# 8. Safe work procedures for asbestos work

The following safe work procedures will apply for asbestos work:

- The removal contractor must develop a site-specific asbestos removal plan before commencing the asbestos work. Such a plan must be prepared in accordance with Section 3 of the Work Safe Australia- How to safely remove asbestos: Code of Practice 2011.
- Only personnel who have been trained in work procedures for the safe removal of asbestos shall work on asbestos.
- A trained, experienced operator must remain on duty outside the removal area and/or enclosure (if installed) at all times that asbestos removal is in progress. Curricula vitae for all persons undertaking asbestos removal works must be submitted to the Principal prior to the commencement of work on the sites.
- Removal of asbestos must generally be carried out by wet removal techniques. That is, as the asbestos material becomes accessible during the removal process, it shall be thoroughly wetted down. Care must be exercised to prevent excessive use of water. The contractor will be held responsible for any water damage.
- Decontamination facilities and procedures shall be undertaken to the complete satisfaction of a hygienist.
- Any signage existing prior to removal must be re-affixed to any new or existing assembly.
- The contractor must ensure that persons in the work area(s) are not exposed to fibre levels greater than those stated in the National Exposure Standard for the type of asbestos being removed.

## Figures

Site layout plans

5141 — Kyeemagh Infants School Site Plan (11730)



## Appendix A

Grounds management checklist

## Kyeemagh Infants School grounds asbestos management checklist – Routine three monthly inspections

 Table 1
 Routine monthly inspection checklist

|      |   | Three monthly inspections                  | Initial inspection |       | Subsequent three | e-monthly inspec | tions |
|------|---|--|--------------------|-------|------------------|------------------|-------|
| Area | Location<br>description   |  | Date:              | Date: | Date:            | Date:            | Date: |
| A    | Grassy field to day care building,  | Surface cover adequate (Y/N)               |                    |       |                  |                  |       |
|      | school boundary<br>fence to Jacobson<br>Ave, to large tree to<br>building G | Suspected asbestos materials visible (Y/N) |                    |       |                  |                  |       |
|      |   |  |                    |       |                  |                  |       |
|      |   |  |                    |       |                  |                  |       |

## Kyeemagh Infants School grounds asbestos management checklist – Incident inspections (e.g. after heavy rain or disturbance)

 Table 2
 Incident inspection checklist

|      |   | Three monthly inspections  | Initial<br>inspection | Subsequent thre | e-monthly inspec | ctions |
|------|---|--|-----------------------|-----------------|------------------|--------|
| Area | Location<br>description   |  | Date: Date:           | Date:           | Date:            | Date:  |
| A    | Grassy field to day<br>care building,<br>extending from<br>school boundary<br>fence to Jacobson | Surface cover adequate (Y/N)<br>Suspected asbestos materials visible (Y/N) |                       |                 |                  |        |
|      | Ave, to large tree to building G  |  |                       |                 |                  |        |



## **Asbestos Remediation Clearance Certificate**

Compliant with Part 3.10 of Safe Work Australia Code of Practice: How to Safely Remove Asbestos, Code of Practice 2011

| Project Information  |  |
|--|--|
| Client:<br>Contact:  | The Trades Team<br>Michael Soliman<br>Unit 29/105A Vanessa Street<br>Kingsgrove NSW 2208   |
| Site Details   | 2259070A   |
|  | 5444 Kusanash Infanta Cabaal Carner Jacobaar   |
| Site:  | Ave and Beehag St, Kyeemagh NSW 2216   |
| Specific work area(s)/room(s):   | Grassy area, at the corner of the school play field and<br>the day care building, to Jacobson Ave.   |
| Description of ACM removal works   |  |
| Removal contractor:<br>Friable/Non-Friable:<br>Date of removal:<br>Scope of work:  | Australasian Technical Services Pty Ltd<br>Non-Friable<br>9 <sup>th</sup> July 2014<br>ATS Pty Ltd was engaged to remove asbestos cement<br>debris from ground surfaces within a section of the<br>school's grassy play area. This encompassed the<br>corner between the school and the adjoining day care<br>building, and extended from the school's boundary<br>fence to Jacobson Ave, to the large tree towards the<br>back of the day care building (see photos).   |
| Clearance Inspection following ACM Remo  | val  |
| Inspector<br>Date and time of inspection:<br>Areas not accessed:<br>Evidence of PVA/sealant application:<br>Visual inspection satisfactory:<br>Comments: | Lamice Ali<br>Visible materials from areas noted above have been<br>removed as far as reasonably practicable.<br>No inspection was carried out to areas that were not<br>included in the above scope.<br>8 <sup>th</sup> July 2014<br>All areas below ground surfaces<br>All areas below dense leaf litter and thick vegetation<br>N/A<br>Yes<br>Parsons Brinckerhoff inspected the area and visually<br>determined that the asbestos containing materials<br>have been removed as far as reasonably practicable.<br>This inspection certificate is valid for areas which were |
|  | can now be returned to normal use.   |
| WIP Airborne Fibre Monitoring  |  |
| WIP air monitoring conducted:<br>Results of air monitoring satisfactory:<br>Comments:  | Yes<br>Yes<br>All Work In Progress monitoring was found to be below<br>the detection limit of <0.01fibres/mL   |
| Conclusion   |  |
| Based on the above findings the work area/site   | e is considered safe for reoccupation.   |
| Issued by: Lamice Ali  | Signature:   |
| Data jaquad: 00/07/2014  |  |

Date issued: 09/07/2014

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#### Standard Limitations of a Clearance Certificate

A visual inspection was undertaken to assess whether visible asbestos material was removed. Inspections are only carried out to the areas detailed to be removed and are conducted where access is available. Specifically no inspection has been carried out to areas that may require further remediation to verify the presence of asbestos. It should be noted that no inspection can be regarded as absolute and that additional asbestos may be encountered or uncovered upon further inspection, building works, or excavation. The inspection was carried out at the time of the completion of the remediation works and was dependent upon site conditions at that time. Parsons Brinckerhoff accepts no responsibility or liability for the completeness of the removal. Comments above regarding the aspects of the inspection also form limitations. The contractor's responsibilities included:

- Ensuring that work methods and procedures comply with the relevant legislation, codes of practice and industry standards, and undertake work in according with technical specifications.
- Employing suitably trained, skilled and competent staff.
- Ensuring that contractors are inducted in safe work procedures for asbestos materials/products.
- Obtaining the necessary approvals from regulatory authorities prior to starting any asbestos removal or maintenance activities.
- Ensuring that all work is conducted in a safe and competent manner.







Photograph 1: work area facing tree, towards the back end of the day care building.



Photograph 2: work area to Jacobson Ave.



## Asbestos Clearance Inspection Report Prepared for:

## Cardno NSW/ACT

Address:

## Kyeemagh Public School, Beehag St, Kyeemagh NSW



**Main Office** Suite 4.03, 5 Celebration Drive, Bella Vista NSW 2153 Contact Details Phone No.: 1300 599 996 Website: <u>www.EnviroXconsulting.com.au</u> Email: <u>info@EnviroXconsulting.com.au</u> **ABN** 83611405942

Page 1



## **Asbestos Clearance Inspection Report**

EnviroX Consulting Report - 2233 / Version 1 final

| Report Details      |   |  |  |  |  |
|---------------------|---|--|--|--|--|
| Job Number          | 2233  |  |  |  |  |
| Client              | Cardno NSW/ACT  |  |  |  |  |
| Address             | Kyeemagh Public School, Beehag St, Kyeemagh NSW   |  |  |  |  |
| Date of Inspection  | 10.11.2018  |  |  |  |  |
| Date of Air         | 10.11.2018  |  |  |  |  |
| Monitoring          |   |  |  |  |  |
| Date of Report      | 11.11.2018  |  |  |  |  |
| Asbestos removalist | Australasian Technical Services   |  |  |  |  |
| Subject area        | Kyeemagh Public School, playground area, area immediately south east of preschool, 2x test pits, top of soil following test pitting |  |  |  |  |
|                     | (Refer to Appendix A – Photographs)   |  |  |  |  |

#### Introduction

As per Cardno NSW/ACT's request, EnviroX Consulting has conducted an asbestos clearance inspection following the test pitting works within the subject area on the 10<sup>th</sup> of November 2018. The details of the inspection are contained within the following pages of this report.

The scope of works for EnviroX consulting is to complete;

- Completion of SWMS prior to works commencing;
- Visual inspection of the subject area following the test pitting works;
- Asbestos air monitoring during the test pitting works; and
- Preparation of an Asbestos Clearance Inspection Report outlining the details and findings of the site inspection.

Contact Details Phone No.: 1300 599 996 Website: <u>www.EnviroXconsulting.com.au</u> Email: <u>info@EnviroXconsulting.com.au</u> **ABN** 83611405942 The survey works and production of this report have been undertaken in accordance with the requirements of:

- WHS Regulation 2017.
- WHS Act 2011.
- NSW Code of Practice: How to Manage and Control Asbestos in the Workplace (2016).
- NSW Code of Practice: How to Safely Remove Asbestos (2016).

#### **Site Inspection Details**

Visual inspection of the subject area at the time of inspection revealed no asbestos containing materials on the soil surface following the test pitting works.

Asbestos air monitoring undertaken during the test pitting works revealed that the concentrations of airborne fibres were below 0.01 fibre/mL (Refer to Appendix B – Laboratory reports).

All areas outside the specified subject area are not included within this report and may contain asbestos containing materials.

#### **Restrictions and limitations upon clearance Certificate**

This asbestos clearance inspection report is restricted to the subject area detailed above. The details within this report are of the site during the inspection only. Areas adjacent to and below the subject area are outside the scope of this report and may contain asbestos materials. This report is based on findings at the time of the inspection, erosion events such as but not limited to wind and traffic (pedestrian or vehicle), may/will expose asbestos containing material beneath the surface which is not included within this report.

If asbestos is found or presumed within this site, EnviroX should be contacted to conduct an inspection and assess the risks associated with the material found.

This report does not provide a complete evaluation of the condition of the site; it is limited to the scope defined as above. Should information become available regarding site conditions including previously unknown sources of contamination, EnviroX reserves the right to review the report in relation to the additional information.

**Contact Details** Phone No.: 1300 599 996 Website: <u>www.EnviroXconsulting.com.au</u> Email: <u>info@EnviroXconsulting.com.au</u>

#### Conclusions

Based on the information presented in this report, it is in the opinion of EnviroX Consulting that;

- Visual inspection of the subject area at the time of inspection revealed there was no asbestos containing materials on the soil surface;
- EnviroX Consulting deems the subject area **safe** for reoccupation;
- Asbestos air monitoring undertaken during the works revealed that the concentration of airborne fibres was below 0.01 fibres/mL;
- This report should be taken as giving an overall idea of the site inspection. Each section must be read in conjunction with the whole of this report, including attachments, no one section should be taken out of this report and read separately; and
- Remain diligent and adhere to the limitation and restrictions stated within this report.

#### Written and Assessed by:

Zeyn Ismail Licensed Asbestos Assessor LA001123 M. Sc. Env. Sc

fsmail

Main Office Suite 4.03, 5 Celebration Drive, Bella Vista NSW 2153 Contact Details Phone No.: 1300 599 996 Website: <u>www.EnviroXconsulting.com.au</u> Email: <u>info@EnviroXconsulting.com.au</u> **ABN** 83611405942

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Appendix A – Photographs

Main Office Suite 4.03, 5 Celebration Drive, Bella Vista NSW 2153 Contact Details Phone No.: 1300 599 996 Website: <u>www.EnviroXconsulting.com.au</u> Email: <u>info@EnviroXconsulting.com.au</u> **ABN** 83611405942

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**Photograph 1.** Subject area – top of soil to former 2x test pits, no visible asbestos containing materials in area adjacent to test pits



Photograph 2. Subject area -test pit

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Photograph 3. Subject area – test pit

**Contact Details** 

Phone No.: 1300 599 996 Website: <u>www.EnviroXconsulting.com.au</u> Email: <u>info@EnviroXconsulting.com.au</u> **ABN** 83611405942 Appendix B – Laboratory Results

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#### Asbestos Air Monitoring – 2233-AAM1

| Job Number         | 2233  |
|--------------------|---|
| Client             | Cardno NSW/ACT                                  |
| Address            | Kyeemagh Public School, Beehag St, Kyeemagh NSW |
| Date of Monitoring | 10.11.2018                                      |

| Date       | Sample<br>ref | Monitor<br>location | Air<br>Flow | Time<br>on | Time<br>off | Total<br>Min | Volume<br>(L) | Fields | Fibre<br>Count | Conc<br>fibre/mL |
|------------|---------------|---------------------|-------------|------------|-------------|--------------|---------------|--------|----------------|------------------|
| 10.11.2018 | 2233-<br>A19  | 1                   | 2L/min      | 07:51      | 11:58       | 233          | 471.5         | 100    | 1.0            | <0.01            |
| 10.11.2018 | 2233-<br>A88  | 2                   | 2L/min      | 07:52      | 11:59       | 233          | 471.5         | 100    | 1.5            | <0.01            |
| 10.11.2018 | 2233-<br>A321 | 3                   | 2L/min      | 07:53      | 11:59       | 234          | 473.5         | 100    | 0.0            | <0.01            |

#### **Monitor locations:**

- 1 North eastern boundary fence of playground, 5m north of kindergarten building, attached to metal fence
- 2 North eastern boundary fence of playground, 5m south of kindergarten building, attached to metal fence
- 3 Southern boundary fence of playground, 15m west of north eastern boundary fence, attached to metal fence

Flowmeter – EXC3 – Calibration factor 1.0118 on 2L/min

#### Contact us

EnviroX Consulting Pty Ltd ABN – 83611405942 Suite 4.03, 5 Celebration Drive, Bella Vista NSW www.EnviroXconsulting.com.au Zeyn Ismail Project Manager / Lead Occupational Hygienist 0401163516 <u>Zeyn@enviroxconsulting.com.au</u>

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#### AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref: ASET69235 / 72415 / 1 - 3 Your ref: 2233 – AAM1 - Kyeemagh NATA Accreditation No: 14484.

10 November 2018

EnviroX Consulting 4.03, 5 Celebration Drive Bella Vista NSW 2153

#### Attn: Mr Zeyn Ismail

#### Air Monitoring for Airborne Asbestos

#### **1. Introduction:**

This report presents the results of three control air monitoring samples carried out\* on 10 November 2018 by Envirox Consulting for analysis for airborne asbestos. Three air monitoring samples were forwarded for analysis by Envirox Consulting on 10 November 2018.

#### 2. Methods:

In accordance with the Work-safe Australia Guidance Notes on Membrane Filter Method on estimating air borne asbestos fibres – Second Edition – NOHSC – 3003 (2005) and **Safer Environment Method 2** as supplementary work instructions.

| 3. Results:<br>Location<br>10/11/2018 | <u>Fibers / 100 Fields</u> | <u>Fibers/mL</u> |
|---------------------------------------|----------------------------|------------------|
| 1- ASET69235 / 72415 / 1 – A19        | 1.0 / 100                  | < 0.01           |
| 2- ASET69235 / 72415 / 2 – A88        | 1.5 / 100                  | < 0.01           |
| 3- ASET69235 / 72415 / 3 – A321       | 0.0 / 100                  | < 0.01           |

Reported by,



Mahen De Silva. BSc, MSc, Grad Dip (Occ Hyg) Occupational Hygienist / Approved Counter Approved Signatory

Accredited for compliance with ISO/IEC 17025.

\*Air monitoring was carried out by Envirox Consulting's trained staff and ASET do not take responsibility for that part.

SUITE 710 / 90, GEORGE STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY WESTFIELD NSW 1635 PHONE: (02) 99872183 EMAIL: info@ausset.com.au WEBSITE: <u>www.ausset.com.au</u>



Locked Bag 2906, Lisarow NSW 2252 Customer Experience 13 10 50 ABN 81 913 830 179 | www.safewprk.nsw.gov.au

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Our Ref: D18/225067

19 November 2018

Ben Withnall Cardno NSW/ACT Pty Ltd Level 9, 203 Pacific Highway St Leonards NSW 2065

Dear Mr Withnall

#### RE SITE: Lot 1 DP120095 & Lot 1 DP335734

I refer to your site search request received by SafeWork NSW on 13 November 2018 requesting information on Storage of Hazardous Chemicals for the above site.

A search of the records held by SafeWork NSW has not located any records pertaining to the above-mentioned premises.

For further information or if you have any questions, please call us on 13 10 50 or email <u>licensing@safework.nsw.gov.au</u>

Yours sincerely

Customer Service Officer Customer Experience - Operations SafeWork NSW



#### Date: 01 Nov 2018 16:29:43

#### Reference: LS004515 EP

#### Address: Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

#### Disclaimer:

The purpose of this report is to provide an overview of some of the site history, environmental risk and planning information available, affecting an individual address or geographical area in which the property is located. It is not a substitute for an on-site inspection or review of other available reports and records. It is not intended to be, and should not be taken to be, a rating or assessment of the desirability or market value of the property or its features. You should obtain independent advice before you make any decision based on the information within the report. The detailed terms applicable to use of this report are set out at the end of this report.

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## **Location Confidences**

Where Lotsearch has had to georeference features from supplied addresses, a location confidence has been assigned to the data record. This indicates a confidence to the positional accuracy of the feature. Where applicable, a confidence is given under the field heading "LocConf" or "Location Confidence".

| LC Code                        | Location Confidence   |
|--------------------------------|---|
| Premise match                  | Georeferenced to the site location / premise or part of site      |
| General area or suburb match   | Georeferenced with the confidence of the general/approximate area |
| Road match                     | Georeferenced to the road or rail                                 |
| Road intersection              | Georeferenced to the road intersection                            |
| Feature is a buffered point    | Feature is a buffered point                                       |
| Land adjacent to geocoded site | Land adjacent to Georeferenced Site                               |

## **Dataset Listing**

Datasets contained within this report, detailing their source and data currency:

| Dataset Name  | Custodian                            | Supply<br>Date | Currency<br>Date | Update<br>Frequency | Dataset<br>Buffer<br>(m) | No.<br>Features<br>Onsite | No.<br>Features<br>within<br>100m | No.<br>Features<br>within<br>Buffer |
|---|--------------------------------------|----------------|------------------|---------------------|--------------------------|---------------------------|-----------------------------------|-------------------------------------|
| Cadastre Boundaries   | Dept. Finance, Services & Innovation | 01/11/2018     | 01/11/2018       | Daily               | -                        | -                         | -                                 | -                                   |
| Topographic Data  | Dept. Finance, Services & Innovation | 17/07/2018     | 17/07/2018       | As<br>required      | -                        | -                         | -                                 | -                                   |
| List of NSW contaminated sites notified to EPA                              | Environment Protection Authority     | 17/10/2018     | 17/10/2018       | Monthly             | 1000                     | 0                         | 0                                 | 2                                   |
| Contaminated Land Records of Notice   | Environment Protection Authority     | 10/10/2018     | 10/10/2018       | Monthly             | 1000                     | 0                         | 0                                 | 2                                   |
| Former Gasworks   | Environment Protection Authority     | 04/10/2018     | 11/10/2017       | Monthly             | 1000                     | 0                         | 0                                 | 0                                   |
| National Waste Management Facilities Database                               | Geoscience Australia                 | 07/08/2018     | 07/03/2017       | Quarterly           | 1000                     | 0                         | 0                                 | 0                                   |
| EPA PFAS Investigation Program  | Environment Protection Authority     | 05/10/2018     | 05/10/2018       | Monthly             | 2000                     | 0                         | 0                                 | 1                                   |
| EPA Other Sites with Contamination<br>Issues                                | Environment Protection Authority     | 11/01/2018     | 11/01/2018       | As<br>required      | 1000                     | 0                         | 0                                 | 0                                   |
| Licensed Activities under the POEO<br>Act 1997                              | Environment Protection Authority     | 01/11/2018     | 01/11/2018       | Monthly             | 1000                     | 0                         | 0                                 | 0                                   |
| Delicensed POEO Activities still<br>Regulated by the EPA                    | Environment Protection Authority     | 01/11/2018     | 01/11/2018       | Monthly             | 1000                     | 0                         | 0                                 | 2                                   |
| Former POEO Licensed Activities now revoked or surrendered                  | Environment Protection Authority     | 01/11/2018     | 01/11/2018       | Monthly             | 1000                     | 1                         | 1                                 | 6                                   |
| UPSS Environmentally Sensitive Zones  | Environment Protection Authority     | 14/04/2015     | 12/01/2010       | As<br>required      | 1000                     | 1                         | 1                                 | 1                                   |
| UBD Business to Business Directory<br>1991 (Premise & Intersection Matches) | Hardie Grant                         |                |                  | Not<br>required     | 150                      | 0                         | 0                                 | 0                                   |
| UBD Business to Business Directory<br>1991 (Road & Area Matches)            | Hardie Grant                         |                |                  | Not<br>required     | 150                      | -                         | 0                                 | 0                                   |
| UBD Business to Business Directory<br>1986 (Premise & Intersection Matches) | Hardie Grant                         |                |                  | Not<br>required     | 150                      | 0                         | 0                                 | 0                                   |
| UBD Business to Business Directory 1986 (Road & Area Matches)               | Hardie Grant                         |                |                  | Not<br>required     | 150                      | -                         | 0                                 | 0                                   |
| UBD Business Directory 1982 (Premise & Intersection Matches)                | Hardie Grant                         |                |                  | Not<br>required     | 150                      | 0                         | 0                                 | 0                                   |
| UBD Business Directory 1982 (Road & Area Matches)                           | Hardie Grant                         |                |                  | Not<br>required     | 150                      | -                         | 0                                 | 0                                   |
| UBD Business Directory 1978 (Premise & Intersection Matches)                | Hardie Grant                         |                |                  | Not<br>required     | 150                      | 0                         | 0                                 | 0                                   |
| UBD Business Directory 1978 (Road & Area Matches)                           | Hardie Grant                         |                |                  | Not<br>required     | 150                      | -                         | 0                                 | 0                                   |
| UBD Business Directory 1975 (Premise & Intersection Matches)                | Hardie Grant                         |                |                  | Not<br>required     | 150                      | 0                         | 0                                 | 0                                   |
| UBD Business Directory 1975 (Road & Area Matches)                           | Hardie Grant                         |                |                  | Not<br>required     | 150                      | -                         | 0                                 | 0                                   |
| UBD Business Directory 1970 (Premise & Intersection Matches)                | Hardie Grant                         |                |                  | Not<br>required     | 150                      | 0                         | 2                                 | 2                                   |
| UBD Business Directory 1970 (Road & Area Matches)                           | Hardie Grant                         |                |                  | Not<br>required     | 150                      | -                         | 0                                 | 1                                   |
| UBD Business Directory 1965 (Premise & Intersection Matches)                | Hardie Grant                         |                |                  | Not<br>required     | 150                      | 0                         | 2                                 | 2                                   |
| UBD Business Directory 1965 (Road & Area Matches)                           | Hardie Grant                         |                |                  | Not<br>required     | 150                      | -                         | 0                                 | 3                                   |
| UBD Business Directory 1961 (Premise & Intersection Matches)                | Hardie Grant                         |                |                  | Not<br>required     | 150                      | 0                         | 2                                 | 3                                   |
| UBD Business Directory 1961 (Road & Area Matches)                           | Hardie Grant                         |                |                  | Not<br>required     | 150                      | -                         | 0                                 | 3                                   |
| UBD Business Directory 1950 (Premise & Intersection Matches)                | Hardie Grant                         |                |                  | Not<br>required     | 150                      | 0                         | 1                                 | 1                                   |
| UBD Business Directory 1950 (Road & Area Matches)                           | Hardie Grant                         |                |                  | Not<br>required     | 150                      | -                         | 0                                 | 0                                   |

| Dataset Name   | Custodian  | Supply<br>Date | Currency<br>Date | Update<br>Frequency | Dataset<br>Buffer<br>(m) | No.<br>Features<br>Onsite | No.<br>Features<br>within<br>100m | No.<br>Features<br>within<br>Buffer |
|--|--|----------------|------------------|---------------------|--------------------------|---------------------------|-----------------------------------|-------------------------------------|
| UBD Business Directory Drycleaners &<br>Motor Garages/Service Stations<br>(Premise & Intersection Matches) | Hardie Grant   |                |                  | Not<br>required     | 500                      | 0                         | 0                                 | 0                                   |
| UBD Business Directory Drycleaners &<br>Motor Garages/Service Stations (Road<br>& Area Matches)            | Hardie Grant   |                |                  | Not<br>required     | 500                      | -                         | 0                                 | 6                                   |
| Points of Interest   | Dept. Finance, Services & Innovation   | 12/10/2018     | 12/10/2018       | Quarterly           | 1000                     | 2                         | 2                                 | 38                                  |
| Tanks (Areas)  | Dept. Finance, Services & Innovation   | 15/10/2018     | 15/10/2018       | Quarterly           | 1000                     | 0                         | 0                                 | 0                                   |
| Tanks (Points)   | Dept. Finance, Services & Innovation   | 15/10/2018     | 15/10/2018       | Quarterly           | 1000                     | 0                         | 0                                 | 0                                   |
| Major Easements  | Dept. Finance, Services & Innovation   | 12/10/2018     | 12/10/2018       | Quarterly           | 1000                     | 0                         | 0                                 | 4                                   |
| State Forest   | Dept. Finance, Services & Innovation   | 18/01/2018     | 18/01/2018       | As<br>required      | 1000                     | 0                         | 0                                 | 0                                   |
| NSW National Parks and Wildlife Service Reserves   | NSW Office of Environment & Heritage   | 18/01/2018     | 30/09/2017       | Annually            | 1000                     | 0                         | 0                                 | 0                                   |
| Hydrogeology Map of Australia  | Commonwealth of Australia<br>(Geoscience Australia)  | 08/10/2014     | 17/03/2000       | As<br>required      | 1000                     | 1                         | 1                                 | 2                                   |
| Botany Groundwater Management<br>Zones   | NSW Department of Primary<br>Industries  | 15/03/2018     | 01/10/2005       | As<br>required      | 1000                     | 0                         | 0                                 | 0                                   |
| Groundwater Boreholes  | NSW Dept. of Primary Industries -<br>Water NSW; Commonwealth of<br>Australia (Bureau of Meteorology) | 24/07/2018     | 23/07/2018       | Annually            | 2000                     | 2                         | 23                                | 368                                 |
| Geological Units 1:100,000   | NSW Dept. of Industry, Resources & Energy  | 20/08/2014     |                  | None<br>planned     | 1000                     | 1                         | -                                 | 7                                   |
| Geological Structures 1:100,000  | NSW Dept. of Industry, Resources & Energy  | 20/08/2014     |                  | None<br>planned     | 1000                     | 0                         | -                                 | 0                                   |
| Naturally Occurring Asbestos Potential   | NSW Dept. of Industry, Resources & Energy  | 04/12/2015     | 24/09/2015       | Unknown             | 1000                     | 0                         | 0                                 | 0                                   |
| Soil Landscapes  | NSW Office of Environment &<br>Heritage  | 12/08/2014     |                  | None<br>planned     | 1000                     | 1                         | -                                 | 6                                   |
| Atlas of Australian Soils  | CSIRO  | 19/05/2017     | 17/02/2011       | As<br>required      | 1000                     | 1                         | 1                                 | 1                                   |
| Environmental Planning Instrument -<br>Acid Sulfate Soils  | NSW Department of Planning and<br>Environment  | 23/10/2018     | 12/10/2018       | As<br>required      | 500                      | 1                         | -                                 | -                                   |
| Atlas of Australian Acid Sulfate Soils   | CSIRO  | 19/01/2017     | 21/02/2013       | As<br>required      | 1000                     | 1                         | 2                                 | 3                                   |
| Dryland Salinity - National Assessment   | National Land and Water Resources<br>Audit   | 18/07/2014     | 12/05/2013       | None<br>planned     | 1000                     | 0                         | 0                                 | 0                                   |
| Dryland Salinity Potential of Western Sydney   | NSW Office of Environment & Heritage   | 12/05/2017     | 01/01/2002       | None<br>planned     | 1000                     | -                         | -                                 | -                                   |
| Mining Subsidence Districts  | Dept. Finance, Services & Innovation   | 13/07/2017     | 01/07/2017       | As<br>required      | 1000                     | 0                         | 0                                 | 0                                   |
| SEPP 14 - Coastal Wetlands   | NSW Planning and Environment   | 17/12/2015     | 24/10/2008       | Annually            | 1000                     | 0                         | 0                                 | 0                                   |
| SEPP 26 - Littoral Rainforest  | NSW Planning and Environment   | 17/12/2015     | 05/02/1988       | Annually            | 1000                     | 0                         | 0                                 | 0                                   |
| SEPP 71 - Coastal Protection   | NSW Planning and Environment   | 17/12/2015     | 01/08/2003       | Annually            | 1000                     | 0                         | 0                                 | 0                                   |
| SEPP Major Developments 2005   | NSW Planning and Environment   | 09/03/2013     | 25/05/2005       | Under<br>Review     | 1000                     | 0                         | 0                                 | 0                                   |
| SEPP Strategic Land Use Areas  | NSW Planning and Environment   | 01/08/2017     | 28/01/2014       | Annually            | 1000                     | 0                         | 0                                 | 0                                   |
| EPI - Land Zoning  | NSW Planning and Environment   | 23/10/2018     | 12/10/2018       | Quarterly           | 1000                     | 2                         | 4                                 | 32                                  |
| EPI - Minimum Lot Size   | NSW Planning and Environment   | 23/10/2018     | 12/10/2018       | Quarterly           | 0                        | 1                         | -                                 | -                                   |
| EPI - Height of Buildings  | NSW Planning and Environment   | 23/10/2018     | 12/10/2018       | Quarterly           | 0                        | 1                         | -                                 | -                                   |
| EPI - Floor Space Ratio  | NSW Planning and Environment   | 23/10/2018     | 12/10/2018       | Quarterly           | 0                        | 1                         | -                                 | -                                   |
| EPI - Land Application   | NSW Planning and Environment   | 23/10/2018     | 12/10/2018       | Quarterly           | 0                        | 1                         | -                                 | -                                   |
| EPI - Land Reservation Acquisition   | NSW Planning and Environment   | 23/10/2018     | 12/10/2018       | Quarterly           | 0                        | 1                         | -                                 | -                                   |
| State Heritage Register - Curtilages   | NSW Office of Environment & Heritage   | 18/10/2018     | 19/01/2018       | Quarterly           | 1000                     | 0                         | 0                                 | 3                                   |

| Dataset Name   | Custodian  | Supply<br>Date | Currency<br>Date | Update<br>Frequency | Dataset<br>Buffer<br>(m) | No.<br>Features<br>Onsite | No.<br>Features<br>within<br>100m | No.<br>Features<br>within<br>Buffer |
|--|--|----------------|------------------|---------------------|--------------------------|---------------------------|-----------------------------------|-------------------------------------|
| Environmental Planning Instrument -<br>Heritage      | NSW Department of Planning and Environment                 | 10/09/2018     | 27/07/2018       | Quarterly           | 1000                     | 0                         | 0                                 | 6                                   |
| Bush Fire Prone Land                                 | NSW Rural Fire Service                                     | 08/08/2018     | 31/07/2018       | Quarterly           | 1000                     | 0                         | 0                                 | 0                                   |
| Native Vegetation of the Sydney<br>Metropolitan Area | NSW Office of Environment & Heritage                       | 01/03/2017     | 16/12/2016       | As<br>required      | 1000                     | 1                         | 1                                 | 11                                  |
| RAMSAR Wetlands                                      | Commonwealth of Australia<br>Department of the Environment | 08/10/2014     | 24/06/2011       | As<br>required      | 1000                     | 0                         | 0                                 | 0                                   |
| Groundwater Dependent Ecosystems                     | Bureau of Meteorology                                      | 14/08/2017     | 15/05/2017       | Unknown             | 1000                     | 0                         | 0                                 | 0                                   |
| Inflow Dependent Ecosystems<br>Likelihood            | Bureau of Meteorology                                      | 14/08/2017     | 15/05/2017       | Unknown             | 1000                     | 0                         | 0                                 | 0                                   |
| NSW BioNet Species Sightings                         | NSW Office of Environment & Heritage                       | 29/10/2018     | 29/10/2018       | Daily               | 10000                    | -                         | -                                 | -                                   |

### Aerial Imagery 2017

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216





### **Contaminated Land & Waste Management Facilities**



Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216



## **Contaminated Land & Waste Management Facilities**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

### List of NSW contaminated sites notified to EPA

Records from the NSW EPA Contaminated Land list within the dataset buffer:

| Map<br>Id | Site  | Address                   | Suburb                | Activity           | Management<br>Class   | Status              | Location<br>Confidence | Dist<br>(m) | Direction     |
|-----------|---|---------------------------|-----------------------|--------------------|---|---------------------|------------------------|-------------|---------------|
| 177       | Shell Service<br>Station<br>Brighton Le<br>Sands &<br>adjacent land | 2 General<br>Holmes Drive | Brighton-Le-<br>Sands | Service<br>Station | Contamination<br>formerly<br>regulated under<br>the CLM Act | Current<br>EPA List | Premise<br>Match       | 960m        | South<br>West |
| 176       | Cook Park   | General<br>Holmes Drive   | Brighton-Le-<br>Sands | Service<br>Station | Contamination<br>formerly<br>regulated under<br>the CLM Act | Current<br>EPA List | Premise<br>Match       | 966m        | South         |

The values within the EPA site management class in the table above, are given more detailed explanations in the table below:

| EPA site management class   | Explanation   |
|---|---|
| Contamination being managed<br>via the planning process<br>(EP&A Act)         | The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. The contamination of this site is managed by the consent authority under the Environmental Planning and Assessment Act 1979 (EP&A Act) planning approval process, with EPA involvement as necessary to ensure significant contamination is adequately addressed. The consent authority is typically a local council or the Department of Planning and Environment. |
| Contamination currently<br>regulated under CLM Act                            | The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). Management of the contamination is regulated by the EPA under the CLM Act. Regulatory notices are available on the EPA's Contaminated Land Public Record of Notices.   |
| Contamination currently<br>regulated under POEO Act                           | The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. Management of the contamination is regulated under the Protection of the Environment Operations Act 1997 (POEO Act). The EPA's regulatory actions under the POEO Act are available on the POEO public register.  |
| Contamination formerly regulated under the CLM Act                            | The EPA has determined that the contamination is no longer significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). The contamination was addressed under the CLM Act.   |
| Contamination formerly regulated under the POEO Act                           | The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed under the Protection of the Environment Operations Act 1997 (POEO Act).  |
| Contamination was addressed<br>via the planning process<br>(EP&A Act)         | The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed by the appropriate consent authority via the planning process under the Environmental Planning and Assessment Act 1979 (EP&A Act).   |
| Ongoing maintenance required<br>to manage residual<br>contamination (CLM Act) | The EPA has determined that ongoing maintenance, under the Contaminated Land Management Act 1997 (CLM Act), is required to manage the residual contamination. Regulatory notices under the CLM Act are available on the EPA's Contaminated Land Public Record of Notices.   |
| Regulation being finalised  | The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997. A regulatory approach is being finalised.  |
| Regulation under the CLM Act not required                                     | The EPA has completed an assessment of the contamination and decided that regulation under the Contaminated Land Management Act 1997 is not required.   |
| Under assessment  | The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or Protection of the Environment Operations Act 1997. Alternatively, the EPA may require information via a notice issued under s77 of the Contaminated Land Management Act 1997 or issue a Preliminary Investigation Order.                          |

NSW EPA Contaminated Land List Data Source: Environment Protection Authority © State of New South Wales through the Environment Protection Authority

## **Contaminated Land & Waste Management Facilities**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

### **Contaminated Land: Records of Notice**

Record of Notices within the dataset buffer:

| Map Id | Name   | Address                   | Suburb                | Notices  | Area<br>No | Location<br>Confidence | Distance | Direction     |
|--------|--|---------------------------|-----------------------|----------|------------|------------------------|----------|---------------|
| 43     | Shell Service<br>Station Brighton<br>Le Sands &<br>adjacent land | 2 General Holmes<br>Drive | Brighton-le-<br>sands | 4 former | 3174       | Premise<br>Match       | 960m     | South<br>West |
| 42     | Cook Park  | General Holmes<br>Drive   | Brighton-le-<br>sands | 6 former | 3285       | Premise<br>Match       | 966m     | South         |

Contaminated Land Records of Notice Data Source: Environment Protection Authority © State of New South Wales through the Environment Protection Authority Terms of use and disclaimer for Contaminated Land: Record of Notices, please visit http://www.epa.nsw.gov.au/clm/clmdisclaimer.htm

### **Former Gasworks**

Former Gasworks within the dataset buffer:

| Map<br>Id | Location             | Council | Further Info | Location<br>Confidence | Distance | Direction |
|-----------|----------------------|---------|--------------|------------------------|----------|-----------|
| N/A       | No records in buffer |         |              |                        |          |           |

Former Gasworks Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

## National Waste Management Site Database

Sites on the National Waste Management Site Database within the dataset buffer:

| Site<br>Id | Owner                   | Name | Address | Suburb | Class | Landfill | Reprocess | Transfer | Comments | Loc<br>Conf | Dist<br>(m) | Direction |
|------------|-------------------------|------|---------|--------|-------|----------|-----------|----------|----------|-------------|-------------|-----------|
| N/A        | No records<br>in buffer |      |         |        |       |          |           |          |          |             |             |           |

Waste Management Facilities Data Source: Geoscience Australia

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## **EPA PFAS Investigation Program** Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216





## **EPA PFAS Investigation Program**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

## **EPA PFAS Investigation Program**

Sites that are part of the EPA PFAS investigation program, within the dataset buffer:

| ld | Site                            | Address                            | Location<br>Confidence        | Distance | Direction |
|----|---------------------------------|------------------------------------|-------------------------------|----------|-----------|
| 16 | Botany Bay area & Georges River | Botany Bay area & Georges<br>River | General Area/<br>Suburb Match | 243m     | South     |

EPA PFAS Investigation Program: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

## **EPA Other Sites with Contamination Issues**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

### **EPA Other Sites with Contamination Issues**

This dataset contains other sites identified on the EPA website as having contamination issues. This dataset currently includes:

- James Hardie asbestos manufacturing and waste disposal sites
- Radiological investigation sites in Hunter's Hill

Sites within the dataset buffer:

| Site Id | Site Name            | Site Address | Dataset | Comments | Location<br>Confidence | Distance | Direction |
|---------|----------------------|--------------|---------|----------|------------------------|----------|-----------|
| N/A     | No records in buffer |              |         |          |                        |          |           |

EPA Other Sites with Contamination Issues: Environment Protection Authority © State of New South Wales through the Environment Protection Authority

## **EPA Activities**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

## Licensed Activities under the POEO Act 1997

Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

| EPL | Organisation            | Name | Address | Suburb | Activity | Loc Conf | Distance | Direction |
|-----|-------------------------|------|---------|--------|----------|----------|----------|-----------|
| N/A | No records in<br>buffer |      |         |        |          |          |          |           |

POEO Licence Data Source: Environment Protection Authority © State of New South Wales through the Environment Protection Authority

### **Delicensed & Former Licensed EPA Activities**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216




# **EPA Activities**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

## Delicensed Activities still regulated by the EPA

Delicensed activities still regulated by the EPA, within the dataset buffer:

| Licence<br>No | Organisation                                | Name              | Address                | Suburb | Activity   | Loc<br>Conf      | Distance | Direction  |
|---------------|---|-------------------|------------------------|--------|--|------------------|----------|------------|
| 7288          | SYDNEY<br>AIRPORT<br>CORPORATION<br>LIMITED | SYDNEY<br>AIRPORT | 241 O'RIODAN<br>STREET | MASCOT | Hazardous, Industrial<br>or Group A Waste<br>Generation or Storage | Premise<br>Match | 361m     | North East |
| 12152         | QANTAS<br>AIRWAYS<br>LIMITED                | Qantas Jet Base   | Sydney Airport         | MASCOT | Hazardous, Industrial<br>or Group A Waste<br>Generation or Storage | Premise<br>Match | 361m     | North East |

Delicensed Activities Data Source: Environment Protection Authority © State of New South Wales through the Environment Protection Authority

# Former Licensed Activities under the POEO Act 1997, now revoked or surrendered

Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the dataset buffer:

| Licence<br>No | Organisation  | Location  | Status      | Issued<br>Date | Activity  | Loc Conf                  | Distance | Direction |
|---------------|---|---|-------------|----------------|---|---------------------------|----------|-----------|
| 12858         | MCCONNELL<br>DOWELL<br>CONSTRUCTOR<br>S (AUST) PTY<br>LTD | Various streets from<br>Kurnell to<br>Erskineville, including<br>the pipeline route<br>across Botany Bay,<br>KURNELL, NSW<br>2231 | Surrendered | 01/05/2008     | Water-based extractive activity,<br>Miscellaneous licensed discharge<br>to waters (at any time) | Network<br>of<br>Features | 0m       | Onsite    |
| 4653          | LUHRMANN<br>ENVIRONMENT<br>MANAGEMENT<br>PTY LTD          | WATERWAYS<br>THROUGHOUT<br>NSW  | Surrendered |                | Other Activities / Non Scheduled<br>Activity - Application of Herbicides                        | Network<br>of<br>Features | 205m     | -         |
| 4838          | Robert Orchard  | Various Waterways<br>throughout New<br>South Wales -<br>SYDNEY NSW 2000   | Surrendered |                | Other Activities / Non Scheduled<br>Activity - Application of Herbicides                        | Network<br>of<br>Features | 205m     | -         |
| 6630          | SYDNEY WEED<br>& PEST<br>MANAGEMENT<br>PTY LTD            | WATERWAYS<br>THROUGHOUT<br>NSW - PROSPECT,<br>NSW, 2148   | Surrendered |                | Other Activities / Non Scheduled<br>Activity - Application of Herbicides                        | Network<br>of<br>Features | 205m     | -         |
| 12139         | WARD CIVIL &<br>ENVIRONMENTA<br>L ENGINEERING<br>PTY LTD  | Lady Robinsion<br>Beach Restoration,<br>Taylor Bar and<br>Kyeemagh Bar<br>Borrow Pits, DOLLS<br>POINT, NSW 2219                   | Surrendered | 19/05/2004     | Water-based extractive activity   | Network<br>of<br>Features | 210m     | South     |
| 10668         | BILFINGER<br>BERGER<br>PROJECT<br>INVESTMENTS<br>PTY LTD  | M5 EAST BETWEEN<br>KINGS GEORGES<br>RD, BEVERLY HILLS<br>& GENERAL<br>HOLMES DRIVE,<br>KYEEMAGH,<br>EARLWOOD, NSW<br>2206         | Surrendered | 05/06/2001     | Road construction   | Road<br>Match             | 349m     | North     |

Former Licensed Activities Data Source: Environment Protection Authority © State of New South Wales through the Environment Protection Authority

## **UPSS Sensitive Zones**





Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

#### **1991 Business to Business Directory Records Premise or Road Intersection Matches**

Records from the 1991 UBD Business to Business Directory, mapped to a premise or road intersection, within the dataset buffer:

| Business Activity | Premise              | Ref No. | Location<br>Confidence | Distance to<br>Feature Point | Direction |
|-------------------|----------------------|---------|------------------------|------------------------------|-----------|
| N/A               | No records in buffer |         |                        |                              |           |

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

#### **1991 Business to Business Directory Records Road or Area Matches**

Records from the 1991 UBD Business to Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

| Business Activity | Premise              | Ref No. | Location<br>Confidence | Distance to Road<br>Corridor or Area |
|-------------------|----------------------|---------|------------------------|--------------------------------------|
| N/A               | No records in buffer |         |                        |                                      |

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

#### **1986 Business to Business Directory Records Premise or Road Intersection Matches**

Records from the 1986 UBD Business to Business Directory, mapped to a premise or road intersection, within the dataset buffer:

| Business Activity | Premise              | Ref No. | Location<br>Confidence | Distance to<br>Feature Point | Direction |
|-------------------|----------------------|---------|------------------------|------------------------------|-----------|
| N/A               | No records in buffer |         |                        |                              |           |

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

#### **1986 Business to Business Directory Records Road or Area Matches**

Records from the 1986 UBD Business to Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

| Business Activity | Premise              | Ref No. | Location<br>Confidence | Distance to Road<br>Corridor or Area |
|-------------------|----------------------|---------|------------------------|--------------------------------------|
| N/A               | No records in buffer |         |                        |                                      |

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

#### **1982 Business Directory Records Premise or Road Intersection Matches**

Records from the 1982 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

| Business Activity | Premise              | Ref No. | Location<br>Confidence | Distance to<br>Feature Point | Direction |
|-------------------|----------------------|---------|------------------------|------------------------------|-----------|
| N/A               | No records in buffer |         |                        |                              |           |

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

## **1982 Business Directory Records** Road or Area Matches

Records from the 1982 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

| Business Activity | Premise              | Ref No. | Location<br>Confidence | Distance to Road<br>Corridor or Area |
|-------------------|----------------------|---------|------------------------|--------------------------------------|
| N/A               | No records in buffer |         |                        |                                      |

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

#### **1978 Business Directory Records Premise or Road Intersection Matches**

Records from the 1978 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

| Business Activity | Premise              | Ref No. | Location<br>Confidence | Distance to<br>Feature Point | Direction |
|-------------------|----------------------|---------|------------------------|------------------------------|-----------|
| N/A               | No records in buffer |         |                        |                              |           |

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

#### 1978 Business Directory Records Road or Area Matches

Records from the 1978 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

| Business Activity | Premise              | Ref No. | Location<br>Confidence | Distance to Road<br>Corridor or Area |
|-------------------|----------------------|---------|------------------------|--------------------------------------|
| N/A               | No records in buffer |         |                        |                                      |

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

#### **1975 Business Directory Records Premise or Road Intersection Matches**

Records from the 1975 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

| Business Activity | Premise              | Ref No. | Location<br>Confidence | Distance to<br>Feature Point | Direction |
|-------------------|----------------------|---------|------------------------|------------------------------|-----------|
| N/A               | No records in buffer |         |                        |                              |           |

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#### **1975 Business Directory Records** Road or Area Matches

Records from the 1975 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

| Business Activity | Premise              | Ref No. | Location<br>Confidence | Distance to Road<br>Corridor or Area |
|-------------------|----------------------|---------|------------------------|--------------------------------------|
| N/A               | No records in buffer |         |                        |                                      |

# **1970 Historical Business Directory Records** Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216





Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

#### **1970 Business Directory Records Premise or Road Intersection Matches**

Records from the 1970 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

| Business Activity                 | Premise   | Ref No. | Location<br>Confidence | Distance to<br>Feature Point | Direction  |
|-----------------------------------|---|---------|------------------------|------------------------------|------------|
| CLUBS & SPORTING BODIES<br>(C487) | N.S.W. Leagues Club Bowling Club, 2 Beehag St.,<br>Kyeemagh       | 284470  | Premise Match          | 43m                          | West       |
| DIVERS (D415)                     | Gray, J.W.& Gray M.J.W., 27 Caroma Ave., North Brighton-le- Sands | 289962  | Premise Match          | 93m                          | South West |

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#### **1970 Business Directory Records** Road or Area Matches

Records from the 1970 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

| Business Activity                  | Premise   | Ref No. | Location<br>Confidence | Distance to Road<br>Corridor or Area |
|------------------------------------|---|---------|------------------------|--------------------------------------|
| FRUITERERS/GREENGROCE<br>RS (F640) | Arena's Fruit Market, 159 General Holmes Drv., Kyeemagh | 306597  | Road Match             | 106m                                 |

# **1965 Historical Business Directory Records** Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216





Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

#### **1965 Business Directory Records Premise or Road Intersection Matches**

Records from the 1965 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

| Business Activity       | Premise  | Ref No. | Location<br>Confidence | Distance to<br>Feature Point | Direction  |
|-------------------------|--|---------|------------------------|------------------------------|------------|
| Clubs & Sporting Bodies | N.S.W. Leagues Club Bowling Club, 2 Beehag St.,<br>Kyeemagh          | 69142   | Premise Match          | 43m                          | West       |
| Divers                  | Gray, J. W. & Gray M. J. W., 27 Caroma Ave., North Brighton-le-Sands | 74609   | Premise Match          | 93m                          | South West |

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## **1965 Business Directory Records Road or Area Matches**

Records from the 1965 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

| Business Activity                        | Premise   | Ref No. | Location<br>Confidence | Distance to Road<br>Corridor or Area |
|--|---|---------|------------------------|--------------------------------------|
| Boat, Launch & Yacht Builder & Repairers | Riley Bros, General Holmes Drv., Kyeemagh       | 52117   | Road Match             | 106m                                 |
| Boats, Launches & Yachts - For<br>Hire   | Riley Bros, General Holmes Drv., Kyeemagh       | 52221   | Road Match             | 106m                                 |
| Milk, Fruit Juice<br>Bars/Confectioners  | Smith, N. M., 158 General Holmes Drv., Kyeemagh | 115609  | Road Match             | 106m                                 |

# **1961 Historical Business Directory Records**





Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

#### **1961 Business Directory Records Premise or Road Intersection Matches**

Records from the 1961 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

| Business Activity      | Premise  | Ref No. | Location<br>Confidence | Distance to<br>Feature Point | Direction  |
|------------------------|--|---------|------------------------|------------------------------|------------|
| DIVERS                 | Gray, J. W. & Gray M. J. W., 27 Caroma Ave., North Brighton-le-Sands | 297340  | Premise<br>Match       | 93m                          | South West |
| DIVERS                 | Gray, J. W., 27 Caroma Ave., Kyeemagh                                | 297341  | Premise<br>Match       | 93m                          | South West |
| ACCOUNTANTS & AUDITORS | Howlson, L. J., 72 Mutch Ave., Kyeemagh                              | 265179  | Premise<br>Match       | 118m                         | North West |

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

#### **1961 Business Directory Records Road or Area Matches**

Records from the 1961 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

| Business Activity                       | Premise   | Ref No. | Location<br>Confidence | Distance to Road<br>Corridor or Area |
|---|---|---------|------------------------|--------------------------------------|
| ARCHITECTURAL DRAFTSMEN                 | Riley Bros., General Holmes Drive, Kyeemagh     | 268630  | Road Match             | 106m                                 |
| ARMATURE WINDERS                        | Riley Bros., General Holmes Drive, Kyeemagh     | 268672  | Road Match             | 106m                                 |
| MILK, FRUIT JUICE<br>BARS/CONFECTIONERS | Smith, N. M., 158 General Holmes Drv., Kyeemagh | 339629  | Road Match             | 106m                                 |

# **1950 Historical Business Directory Records** Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216





Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

#### **1950 Business Directory Records Premise or Road Intersection Matches**

Records from the 1950 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

| Business Activity                           | Premise   | Ref No. | Location<br>Confidence | Distance to<br>Feature Point | Direction |
|---|---|---------|------------------------|------------------------------|-----------|
| ELECTRICAL CONTRACTORS<br>&/OR ELECTRICIANS | Wright Bros., 31 Jacobson Ave., Brighton-le-Sands | 37983   | Premise Match          | 43m                          | South     |

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

## 1950 Business Directory Records Road or Area Matches

Records from the 1950 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

| Business Activity | Premise              | Ref No. | Location<br>Confidence | Distance to Road<br>Corridor or Area |
|-------------------|----------------------|---------|------------------------|--------------------------------------|
| N/A               | No records in buffer |         |                        |                                      |

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

## Dry Cleaners, Motor Garages & Service Stations Premise or Road Intersection Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a premise or road intersection, within the dataset buffer:

| Business Activity | Premise              | Ref No. | Year | Location<br>Confidence | Distance to<br>Feature Point | Direction |
|-------------------|----------------------|---------|------|------------------------|------------------------------|-----------|
| N/A               | No records in buffer |         |      |                        |                              |           |

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

#### Dry Cleaners, Motor Garages & Service Stations Road or Area Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

| Business Activity   | Premise   | Ref No. | Year | Location<br>Confidence | Distance to Road<br>Corridor or Area |
|---|---|---------|------|------------------------|--------------------------------------|
| MOTOR GARAGES &<br>ENGINEERS                                      | Metro Motors, 97 Grand Pde. BRIGHTON-LE-SANDS                     | 347712  | 1961 | Road Match             | 249m                                 |
| MOTOR GARAGES & SERVICE STATIONS.                                 | Sydney Airport Service Station, General Holmes Rd., Mascot.       | 65544   | 1986 | Road Match             | 282m                                 |
| MOTOR GARAGES &/OR<br>ENGINEERS &/OR SERVICE<br>STATIONS.         | Sydney Airport Service Station, General Holmes Rd., Mascot.       | 50918   | 1978 | Road Match             | 282m                                 |
| MOTOR SERVICE STATIONS -<br>PETROL, OIL                           | Sydney Airport Service Station, General Holmes Rd., Mascot.       | 61976   | 1975 | Road Match             | 282m                                 |
| MOTOR GARAGES &/OR<br>ENGINEERS &/OR SERVICE<br>STATIONS. (M6860) | Sydney Airport Service Station, General Holmes Rd., Mascot. 2020. | 57665   | 1982 | Road Match             | 282m                                 |
| MOTOR SERVICE STATIONS-<br>PETROL,OIL,Etc. (M716)                 | Sydney Airport Service Station, General Holmes<br>Drv.MASCOT      | 341525  | 1970 | Road Match             | 282m                                 |





















































## **Topographic Map 2015**





## **Historical Map 1975**





## **Historical Map 1936**





## **Historical Map 1917**





## **Topographic Features**





# **Topographic Features**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

## **Points of Interest**

What Points of Interest exist within the dataset buffer?

| Map Id | Feature Type       | Label                           | Distance | Direction  |
|--------|--------------------|---------------------------------|----------|------------|
| 650230 | Primary School     | KYEEMAGH INFANTS SCHOOL         | 0m       | Onsite     |
| 650302 | Child Care Centre  | NORTH BRIGHTON PRE-SCHOOL       | 0m       | Onsite     |
| 650301 | Suburb             | KYEEMAGH                        | 177m     | South West |
| 650298 | Park               | COOK PARK                       | 178m     | East       |
| 650300 | Park               | MUTCH AVENUE RESERVE            | 193m     | South West |
| 650280 | Park               | KYEEMAGH RESERVE                | 223m     | North      |
| 650293 | Club               | KYEEMAGH RSL AND COMMUNITY CLUB | 224m     | North West |
| 650299 | Wharf              | Wharf                           | 257m     | North      |
| 650259 | Boat Ramp          | Boat Ramp                       | 260m     | North      |
| 650241 | Wharf              | Wharf                           | 272m     | North      |
| 650296 | Sports Field       | HOCKEY FIELD                    | 274m     | North West |
| 650240 | Picnic Area        | Picnic Area                     | 285m     | North      |
| 650396 | Community Facility | ST GEORGE RANDWICK HOCKEY CLUB  | 306m     | North West |
| 650199 | Park               | MUDDY CREEK RESERVE             | 389m     | West       |
| 650295 | Wharf              | Wharf                           | 601m     | West       |
| 650289 | Park               | LANCE STUDDERT RESERVE          | 608m     | West       |
| 650249 | Wharf              | Wharf                           | 611m     | West       |
| 650258 | Boat Ramp          | Boat Ramp                       | 619m     | West       |
| 650250 | Wharf              | Wharf                           | 620m     | West       |
| 650257 | Slipway            | Slipway                         | 622m     | West       |
| 650254 | Wharf              | Wharf                           | 625m     | West       |
| 650256 | Slipway            | Slipway                         | 627m     | West       |
| 650255 | Slipway            | Slipway                         | 632m     | West       |
| 650189 | Sports Centre      | ST GEORGE SOCCER STADIUM        | 641m     | West       |
| 650252 | Wharf              | Wharf                           | 644m     | West       |
| 650253 | Wharf              | Wharf                           | 646m     | West       |
| 650251 | Wharf              | Wharf                           | 650m     | West       |
| 650304 | Wharf              | Wharf                           | 691m     | West       |
| 650305 | Wharf              | Wharf                           | 693m     | West       |
| 650303 | Wharf              | Wharf                           | 696m     | West       |
| Map Id | Feature Type   | Label                  | Distance | Direction  |
|--------|----------------|------------------------|----------|------------|
| 650281 | Park           | FRANK SEARLE GARDENS   | 723m     | West       |
| 650210 | Park           | BARTON PARK            | 759m     | West       |
| 650294 | Sports Field   | AP AUSTIN FIELD        | 773m     | North West |
| 650297 | Community Home | JENNY-LYN NURSING HOME | 804m     | South West |
| 650208 | Park           | RIVERINE PARK          | 851m     | North West |
| 650221 | Sports Field   | BASEBALL FIELD         | 888m     | North West |
| 650200 | Park           | WHITEOAK RESERVE       | 902m     | South West |
| 650190 | Golf Course    | BARTON PARK GOLF RANGE | 940m     | North West |

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# **Topographic Features**

#### Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

### **Tanks (Areas)**

What are the Tank Areas located within the dataset buffer?

Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

| Map Id | Tank Type            | Status | Name | Feature Currency | Distance | Direction |  |
|--------|----------------------|--------|------|------------------|----------|-----------|--|
|        | No records in buffer |        |      |                  |          |           |  |

## Tanks (Points)

What are the Tank Points located within the dataset buffer? Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

| Map Id | Tank Type            | Status | Name | Feature Currency | Distance | Direction |
|--------|----------------------|--------|------|------------------|----------|-----------|
|        | No records in buffer |        |      |                  |          |           |

Tanks Data Source: © Land and Property Information (2015)

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### **Major Easements**

What Major Easements exist within the dataset buffer?

Note. Easements provided by LPI are not at the detail of local governments. They are limited to major easements such as Right of Carriageway, Electrical Lines (66kVa etc.), Easement to drain water & Significant subterranean pipelines (gas, water etc.).

| Map Id    | Easement Class | Easement Type | Easement Width | Distance | Direction  |
|-----------|----------------|---------------|----------------|----------|------------|
| 120112200 | Primary        | Undefined     |                | 444m     | North East |
| 120116094 | Primary        | Undefined     |                | 444m     | North      |
| 120110460 | Primary        | Undefined     |                | 636m     | South West |
| 120112434 | Primary        | Undefined     |                | 812m     | West       |

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# **Topographic Features**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

#### **State Forest**

What State Forest exist within the dataset buffer?

| State Forest Number | State Forest Name    | Distance | Direction |
|---------------------|----------------------|----------|-----------|
| N/A                 | No records in buffer |          |           |

State Forest Data Source: © Land and Property Information (2015)

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## National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

| Reserve Number | Reserve Type         | Reserve Name | Gazetted Date | Distance | Direction |
|----------------|----------------------|--------------|---------------|----------|-----------|
| N/A            | No records in buffer |              |               |          |           |

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#### **Elevation Contours (m AHD)**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216





# Hydrogeology & Groundwater

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

## Hydrogeology

Description of aquifers on-site:

#### Description

Porous, extensive highly productive aquifers

Description of aquifers within the dataset buffer:

| Description  |
|--|
| Porous, extensive aquifers of low to moderate productivity |
| Porous, extensive highly productive aquifers               |
|  |

Hydrogeology Map of Australia : Commonwealth of Australia (Geoscience Australia) Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

### **Botany Groundwater Management Zones**

Groundwater management zones relating to the Botany Sand Beds aquifer within the dataset buffer:

| Management<br>Zone No. | Restriction          | Distance | Direction |
|------------------------|----------------------|----------|-----------|
| N/A                    | No records in buffer |          |           |

Botany Groundwater Management Zones Data Source : NSW Department of Primary Industries

#### **Groundwater Boreholes**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216





# Hydrogeology & Groundwater

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

### **Groundwater Boreholes**

Boreholes within the dataset buffer:

| GW No.       | Licence<br>No  | Work<br>Type | Owner<br>Type | Authorised<br>Purpose                      | Intended<br>Purpose | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist | Dir           |
|--------------|--|--------------|---------------|--|---------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|------|---------------|
| GW023<br>455 | 10BL016<br>606,<br>10WA11<br>2828                    | Spear        | Private       | Domestic                                   | General<br>Use      |      | 01/12/1965       | 4.80                  | 4.90                    | Good               |            |                |               | 0m   | Onsite        |
| GW109<br>028 | 10BL161<br>062,<br>10BL603<br>289,<br>10WA11<br>4576 | Bore         | School        | Domestic,<br>Recreation -<br>High Security | Domestic            |      | 02/12/2002       | 8.00                  | 8.00                    | Good               | 6.00       | 0.500          |               | 0m   | Onsite        |
| GW109<br>111 | 10BL602<br>325,<br>10WA11<br>4488                    | Spear        | Private       | Domestic                                   | Domestic            |      | 24/07/2008       | 5.00                  |                         | Good               | 2.44       | 1.000          |               | 40m  | East          |
| GW101<br>797 | 10BL157<br>238,<br>10WA11<br>3130                    | Bore         |               | Domestic                                   | Domestic            |      | 24/10/1995       | 5.80                  | 5.80                    | Good               | 2.75       | 1.000          |               | 41m  | East          |
| GW107<br>210 | 10BL164<br>823,<br>10WA11<br>3865                    | Spear        | Private       | Domestic                                   | Domestic            |      | 05/07/2005       | 6.00                  | 6.00                    |                    | 4.00       | 0.500          |               | 42m  | West          |
| GW105<br>991 | 10BL162<br>716,<br>10WA11<br>3476                    | Spear        | Private       | Domestic                                   | Domestic            |      | 23/03/2004       | 6.00                  | 6.00                    | Good               | 3.00       | 0.500          |               | 48m  | North         |
| GW109<br>155 | 10BL162<br>412,<br>10WA11<br>3424                    | Spear        | Private       | Domestic                                   | Domestic            |      | 05/08/2008       | 8.85                  |                         | Good               | 5.49       | 1.000          |               | 56m  | South<br>West |
| GW108<br>702 | 10BL601<br>658,<br>10WA11<br>4400                    | Spear        | Private       | Domestic                                   | Domestic            |      | 19/04/2007       | 6.00                  | 6.00                    | Good               | 4.00       | 0.500          |               | 62m  | North<br>West |
| GW111<br>939 | 10BL603<br>158,<br>10WA11<br>4572                    | Spear        | Private       | Domestic                                   | Domestic            |      | 23/01/2010       | 6.00                  | 6.00                    |                    | 3.00       |                |               | 64m  | North<br>West |
| GW102<br>799 | 10BL159<br>561,<br>10WA11<br>3292                    | Bore         |               | Domestic                                   | Domestic            |      | 07/02/2000       | 7.63                  | 7.63                    | Good               |            |                |               | 65m  | West          |
| GW101<br>163 | 10BL157<br>034,<br>10WA11<br>3102                    | Spear        | Private       | Domestic                                   | Domestic            |      | 06/09/1995       | 5.79                  | 5.79                    | Good               | 3.66       | 0.800          |               | 66m  | East          |
| GW109<br>654 | 10BL602<br>631,<br>10WA11<br>4526                    | Spear        | Private       | Domestic                                   | Domestic            |      | 23/09/2008       | 8.23                  | 8.24                    |                    | 4.88       | 1.000          |               | 69m  | West          |
| GW102<br>218 | 10BL159<br>069,<br>10WA11<br>3271                    | Spear        | Private       | Domestic                                   | Domestic            |      | 02/03/1999       | 6.71                  | 6.71                    | Good               | 3.96       | 1.000          |               | 71m  | North<br>West |
| GW102<br>693 | 10BL159<br>440,<br>10WA11<br>3290                    | Bore         |               | Domestic                                   | Domestic            |      | 29/09/1999       | 7.63                  | 7.63                    | Good               | 4.27       |                |               | 71m  | North<br>West |

| GW No.       | Licence<br>No                     | Work<br>Type | Owner<br>Type | Authorised<br>Purpose | Intended<br>Purpose | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist | Dir           |
|--------------|-----------------------------------|--------------|---------------|-----------------------|---------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|------|---------------|
| GW101<br>022 | 10BL156<br>997,<br>10WA11<br>3096 | Bore         | Private       | Domestic              | Domestic            |      | 30/08/1995       | 6.10                  | 6.10                    | Good               | 3.97       | 1.000          |               | 72m  | East          |
| GW107<br>052 | 10BL164<br>906,<br>10WA11<br>3882 | Spear        | Private       | Domestic              | Domestic            |      | 07/04/2005       | 5.80                  | 5.80                    | Good               | 2.44       | 1.000          |               | 73m  | North<br>East |
| GW108<br>571 | 10BL601<br>351,<br>10WA11<br>4326 | Spear        | Private       | Domestic              | Domestic            |      | 20/02/2007       | 8.85                  | 8.85                    | Good               | 5.49       | 1.000          |               | 74m  | South         |
| GW108<br>239 | 10BL600<br>633,<br>10WA11<br>4184 | Spear        | Private       | Domestic              | Domestic            |      | 01/11/2006       | 7.63                  | 7.63                    |                    | 4.25       | 1.000          |               | 85m  | South<br>West |
| GW109<br>673 | 10BL165<br>462,<br>10WA11<br>3981 | Bore         | Private       | Domestic              | Domestic            |      | 18/12/2008       | 7.00                  |                         |                    |            |                |               | 90m  | West          |
| GW100<br>685 | 10BL156<br>955,<br>10WA11<br>3089 | Bore         | Private       | Domestic              | Domestic            |      | 25/08/1995       | 6.10                  | 6.10                    | Good               | 3.66       | 1.000          |               | 90m  | North<br>East |
| GW105<br>774 | 10BL162<br>646,<br>10WA11<br>3464 | Spear        | Private       | Domestic              | Domestic            |      | 07/01/2004       | 7.32                  | 7.32                    |                    | 4.58       | 1.000          |               | 95m  | West          |
| GW108<br>582 | 10BL600<br>591,<br>10WA11<br>4173 | Spear        | Private       | Domestic              | Domestic            |      | 28/01/2007       | 8.54                  | 8.54                    | Good               | 4.27       | 1.000          |               | 98m  | South<br>West |
| GW024<br>202 | 10BL018<br>635,<br>10WA11<br>2964 | Spear        | Private       | Domestic              | General<br>Use      |      | 01/01/1966       | 6.70                  | 6.70                    | Good               |            |                |               | 100m | South<br>West |
| GW108<br>179 | 10BL165<br>949,<br>10WA11<br>4065 | Spear        | Private       | Domestic              | Domestic            |      | 29/07/2006       | 9.76                  | 9.76                    |                    | 5.49       | 1.000          |               | 101m | South         |
| GW106<br>869 | 10BL164<br>561,<br>10WA11<br>3810 | Bore         |               | Domestic              |                     |      | 08/03/2006       |                       |                         |                    |            |                |               | 101m | East          |
| GW105<br>674 | 10BL162<br>727,<br>10WA11<br>3477 | Spear        | Private       | Domestic              | Domestic            |      | 02/02/2004       | 7.02                  | 7.02                    |                    |            |                |               | 107m | West          |
| GW106<br>557 | 10BL163<br>595,<br>10WA11<br>3624 | Spear        | Private       | Domestic              | Domestic            |      | 31/07/2004       | 6.10                  | 6.10                    | Good               | 3.50       | 1.000          |               | 110m | North<br>East |
| GW109<br>280 | 10BL602<br>494,<br>10WA11<br>4520 | Spear        | Private       | Domestic              | Domestic            |      | 01/01/2003       | 7.00                  | 7.00                    | Good               | 5.49       | 1.000          |               | 111m | South         |
| GW106<br>014 | 10BL162<br>673,<br>10WA11<br>3470 | Spear        | Private       | Domestic              | Domestic            |      | 27/06/2004       | 7.32                  | 7.32                    |                    | 4.27       | 1.000          |               | 129m | North<br>West |
| GW106<br>940 | 10BL162<br>264,<br>10WA11<br>3383 | Spear        | Private       | Domestic              | Domestic            |      | 16/03/2005       | 6.00                  | 6.00                    | Good               | 3.00       | 0.500          |               | 133m | North<br>East |
| GW112<br>983 | 10BL602<br>359,<br>10WA11<br>4496 | Spear        | Private       | Domestic              | Domestic            |      | 25/02/2008       | 7.00                  | 7.00                    |                    | 5.00       | 0.410          |               | 142m | West          |
| GW110<br>276 | 10BL165<br>642,<br>10WA11<br>4007 | Spear        | Private       | Domestic              | Domestic            |      | 01/01/1999       | 9.00                  |                         |                    | 2.00       | 2.500          |               | 144m | North<br>East |
| GW024<br>203 | 10BL018<br>627,<br>10WA11<br>2960 | Spear        | Private       | Domestic              | General<br>Use      |      | 01/08/1966       | 5.40                  | 5.50                    | Good               |            |                |               | 151m | West          |

| GW No.       | Licence<br>No                     | Work<br>Type | Owner<br>Type | Authorised<br>Purpose      | Intended<br>Purpose       | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist | Dir           |
|--------------|-----------------------------------|--------------|---------------|----------------------------|---------------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|------|---------------|
| GW108<br>965 | 10BL602<br>253,<br>10WA11<br>4474 | Spear        | Private       | Domestic                   | Domestic                  |      | 26/06/2008       | 6.00                  |                         |                    |            |                |               | 152m | North         |
| GW026<br>514 | 10BL019<br>296,<br>10WA11<br>2984 | Spear        | Private       | Domestic                   | General<br>Use            |      | 01/01/1966       | 7.90                  |                         | Good               |            |                |               | 159m | South<br>West |
| GW113<br>040 | 10BL602<br>343,<br>10WA11<br>4492 | Spear        | Private       | Domestic                   | Domestic                  |      | 26/05/2009       | 6.00                  | 6.00                    |                    |            |                |               | 165m | West          |
| GW106<br>991 | 10BL159<br>771,<br>10CA11<br>4725 | Bore         |               | Irrigation                 | Irrigation                |      | 01/01/1950       | 5.00                  |                         |                    | 1.00       | 7.000          |               | 167m | North<br>West |
| GW110<br>670 | 10BL603<br>425,<br>10WA11<br>4581 | Spear        | Private       | Domestic                   | Domestic                  |      | 24/11/2009       | 5.80                  | 5.80                    | Good               | 2.13       | 1.000          |               | 170m | North<br>East |
| GW108<br>795 | 10BL601<br>787,<br>10WA11<br>4414 | Spear        | Private       | Domestic                   | Domestic                  |      | 12/06/2007       | 6.10                  | 6.10                    | Good               | 2.44       | 1.000          |               | 170m | North<br>East |
| GW106<br>799 | 10BL163<br>588,<br>10WA11<br>3621 | Spear        | Private       | Domestic                   | Domestic                  |      | 07/01/2005       | 6.00                  | 6.00                    |                    |            |                |               | 176m | West          |
| GW106<br>712 | 10BL162<br>377,<br>10WA11<br>3419 | Spear        | Private       | Domestic                   | Domestic                  |      | 10/01/2005       | 7.00                  | 7.00                    | Good               | 5.00       | 0.500          |               | 183m | West          |
| GW023<br>208 |                                   | Spear        | Private       |                            | General<br>Use            |      | 01/02/1966       | 5.40                  | 5.50                    | Fair               |            |                |               | 196m | West          |
| GW072<br>785 |                                   | Spear        | Private       |                            | Domestic                  |      | 11/01/1995       | 7.60                  | 7.60                    | Good               |            |                |               | 203m | South<br>West |
| GW104<br>867 | 10BL161<br>076,<br>10WA11<br>3325 | Bore         | Private       | Domestic                   | Domestic                  |      | 02/12/2002       | 8.85                  | 8.85                    |                    | 5.80       | 1.000          |               | 203m | South<br>West |
| GW111<br>540 | 10BL602<br>643,<br>10WA11<br>4527 | Spear        | Private       | Domestic                   | Domestic                  |      | 16/08/2008       | 8.54                  | 8.54                    | good               | 1.49       | 1.000          |               | 208m | East          |
| GW106<br>271 | 10BL163<br>488,<br>10WA11<br>3593 | Spear        | Private       | Domestic                   | Domestic                  |      | 02/08/2004       | 6.10                  | 6.10                    | Good               | 3.05       | 1.000          |               | 215m | West          |
| GW023<br>276 | 10BL017<br>088                    | Bore         | Private       | Recreation<br>(groundwater | Recreation<br>(groundwate |      |                  | 8.80                  | 8.80                    | Good               |            | 1.890          |               | 224m | North<br>West |
| GW023<br>524 | 10BL016<br>652                    | Spear        | Private       | Domestic                   | General<br>Use            |      | 01/12/1965       | 6.00                  | 6.10                    | Good               |            |                |               | 225m | West          |
| GW106<br>990 | 10BL159<br>684,<br>10CA11<br>4729 | Bore         |               | Irrigation                 | Irrigation                |      | 01/01/1960       | 5.00                  |                         |                    | 2.00       | 7.000          |               | 236m | West          |
| GW110<br>133 | 10BL602<br>919,<br>10WA11<br>4558 | Spear        | Private       | Domestic                   | Domestic                  |      | 07/03/2009       | 8.54                  | 8.54                    | Good               | 5.80       |                |               | 243m | East          |
| GW107<br>977 | 10BL164<br>914,<br>10WA11<br>3886 | Spear        | Private       | Domestic                   | Domestic                  |      | 09/05/2005       | 5.80                  | 5.80                    |                    | 2.75       | 1.000          |               | 246m | West          |
| GW024<br>379 | 10BL018<br>579,<br>10WA11<br>2959 | Spear        | Private       | Domestic                   | General<br>Use            |      | 01/01/1966       | 8.20                  | 8.20                    | Good               |            |                |               | 268m | South<br>East |
| GW111<br>598 | 10BL602<br>766,<br>10WA11<br>4534 | Spear        | Private       | Domestic                   | Domestic                  |      | 01/01/1977       | 9.00                  | 9.00                    |                    | 4.00       | 0.500          |               | 268m | South         |
| GW013<br>505 | 10BL008<br>612                    | Spear        | Private       | Irrigation                 | General<br>Use            |      | 01/01/1950       | 9.10                  | 9.10                    | Good               |            |                |               | 276m | South         |

| GW No.       | Licence<br>No  | Work<br>Type  | Owner<br>Type | Authorised<br>Purpose  | Intended<br>Purpose | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist | Dir           |
|--------------|--|---------------|---------------|------------------------|---------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|------|---------------|
| GW110<br>846 | 10BL600<br>611,<br>10WA11<br>4176                    | Spear         | Private       | Domestic               | Domestic            |      | 01/01/2007       | 8.00                  |                         |                    | 2.00       | 2.500          |               | 278m | South<br>West |
| GW026<br>881 | 10BL019<br>636,<br>10WA11<br>2988                    | (Unkn<br>own) | Private       | Domestic               | General<br>Use      |      | 01/12/1966       | 6.70                  |                         |                    |            |                |               | 284m | South<br>West |
| GW072<br>283 |  | Spear         | Private       |                        | Domestic            |      | 18/12/1994       | 7.30                  | 7.30                    | Good               |            |                |               | 289m | West          |
| GW023<br>684 | 10BL017<br>820,<br>10WA11<br>2934                    | Spear         | Private       | Domestic               | General<br>Use      |      | 01/04/1966       | 7.90                  | 7.90                    | Good               |            |                |               | 297m | South         |
| GW100<br>740 | 10BL157<br>744,<br>10WA11<br>3174                    | Bore          | Private       | Domestic               | Domestic            |      | 24/09/1996       | 8.23                  | 8.24                    | Good               | 5.33       | 1.000          |               | 301m | South<br>West |
| GW111<br>895 | 10BL165<br>967,<br>10WA11<br>4070                    | Spear         | Private       | Domestic               | Domestic            |      | 16/01/2006       | 7.32                  | 7.32                    |                    | 3.96       | 1.000          |               | 311m | West          |
| GW110<br>098 | 10BL600<br>065,<br>10WA11<br>4090                    | Spear         | Private       | Domestic               | Domestic            |      | 23/02/2006       | 8.23                  | 8.24                    | Good               | 4.58       | 1.000          |               | 317m | South<br>West |
| GW103<br>152 | 10BL159<br>732,<br>10WA11<br>3295                    | Bore          |               | Domestic               | Domestic            |      | 30/07/2000       | 8.24                  | 8.24                    | Good               |            |                |               | 320m | South<br>West |
| GW106<br>992 | 10BL159<br>738,<br>10CA11<br>4727                    | Bore          |               | Irrigation             | Irrigation          |      | 01/01/1950       | 5.00                  |                         |                    | 1.30       | 7.000          |               | 322m | West          |
| GW111<br>121 | 10BL603<br>637,<br>10WA11<br>4593                    | Spear         | Private       | Domestic               | Domestic            |      | 28/08/2010       | 10.68                 | 10.68                   |                    | 6.71       | 1.000          |               | 326m | South         |
| GW105<br>565 | 10BL162<br>106,<br>10WA11<br>3349                    | Bore          |               | Domestic               | Domestic            |      | 07/10/2003       | 7.63                  | 7.63                    |                    | 4.58       |                |               | 332m | West          |
| GW111<br>139 | 10BL601<br>682,<br>10WA11<br>4405                    | Spear         | Private       | Domestic               | Domestic            |      | 26/04/2007       | 10.98                 | 10.98                   | good               | 7.32       | 1.000          |               | 339m | South         |
| GW107<br>101 | 10BL163<br>493,<br>10WA11<br>3595                    | Spear         | Private       | Domestic               | Domestic            |      | 08/06/2005       | 9.00                  | 9.00                    |                    |            |                |               | 356m | South         |
| GW109<br>674 | 10BL165<br>312,<br>10WA11<br>3958                    | Spear         | Private       | Domestic               | Domestic            |      | 26/04/2005       | 6.00                  |                         |                    |            |                |               | 362m | South<br>West |
| GW106<br>720 | 10BL164<br>139,<br>10WA11<br>3734                    | Spear         | Private       | Domestic               | Domestic            |      | 07/01/2005       | 6.00                  | 6.00                    |                    |            |                |               | 362m | South<br>West |
| GW106<br>993 | 10BL159<br>738,<br>10CA11<br>4727                    | Bore          |               | Irrigation             | Irrigation          |      | 01/01/1950       | 5.00                  |                         |                    | 1.30       | 7.000          |               | 363m | West          |
| GW025<br>713 | 10BL016<br>457,<br>10BL165<br>860,<br>10WA11<br>4049 | Spear         | Private       | Domestic,<br>Not Known | Domestic            |      | 01/12/1965       | 7.00                  | 7.00                    | Good               |            |                |               | 368m | South<br>West |
| GW107<br>605 | 10BL165<br>686,<br>10WA11<br>4020                    | Spear         | Private       | Domestic               | Domestic            |      | 03/10/2005       | 8.54                  | 8.54                    | Good               | 5.49       | 1.000          |               | 370m | South<br>West |
| GW110<br>441 | 10BL603<br>268,<br>10WA11<br>4575                    | Spear         | Private       | Domestic               | Domestic            |      | 08/09/2009       | 8.54                  | 8.54                    | Good               | 5.49       | 1.000          |               | 377m | South<br>West |

| GW No.       | Licence<br>No                     | Work<br>Type | Owner<br>Type | Authorised<br>Purpose | Intended<br>Purpose | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist | Dir           |
|--------------|-----------------------------------|--------------|---------------|-----------------------|---------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|------|---------------|
| GW109<br>932 | 10BL602<br>834,<br>10WA11<br>4543 | Spear        | Private       | Domestic              | Domestic            |      | 28/01/2009       | 7.32                  | 7.32                    | Good               | 4.27       | 1.000          |               | 401m | South<br>West |
| GW111<br>885 | 10BL601<br>058,<br>10WA11<br>4276 | Spear        | Private       | Domestic              | Domestic            |      | 24/01/2007       | 6.00                  | 6.00                    |                    | 3.00       | 1.000          |               | 429m | South<br>West |
| GW108<br>744 | 10BL601<br>462,<br>10WA11<br>4357 | Spear        | Private       | Domestic              | Domestic            |      | 25/02/2007       | 9.15                  | 9.15                    | Good               |            | 1.000          |               | 433m | South<br>West |
| GW106<br>948 | 10BL164<br>789,<br>10WA11<br>3859 | Bore         |               | Domestic              |                     |      | 31/03/2006       |                       |                         |                    |            |                |               | 435m | South<br>West |
| GW108<br>713 | 10BL601<br>625,<br>10WA11<br>4392 | Spear        | Private       | Domestic              | Domestic            |      | 10/04/2007       | 9.15                  | 9.15                    | Good               | 6.10       | 1.000          |               | 447m | South<br>West |
| GW106<br>989 | 10BL159<br>683,<br>10CA11<br>4731 | Bore         |               | Irrigation            | Irrigation          |      | 01/01/1960       | 5.00                  |                         |                    | 1.50       | 13.00<br>0     |               | 447m | West          |
| GW108<br>547 | 10BL601<br>149,<br>10WA11<br>4291 | Spear        | Private       | Domestic              | Domestic            |      | 06/02/2007       | 7.01                  | 7.02                    | Good               | 3.90       | 1.000          |               | 449m | South<br>West |
| GW107<br>516 | 10BL163<br>905,<br>10WA11<br>3703 | Spear        | Private       | Domestic              | Domestic            |      | 01/10/2005       | 8.00                  | 8.00                    |                    |            |                |               | 461m | South<br>West |
| GW023<br>291 | 10BL017<br>194,<br>10WA11<br>2872 | Spear        | Private       | Domestic              | General<br>Use      |      | 01/11/1965       | 7.60                  | 7.60                    |                    |            |                |               | 462m | South<br>West |
| GW109<br>093 | 10BL602<br>339,<br>10WA11<br>4491 | Spear        | Private       | Domestic              | Domestic            |      | 22/07/2008       | 7.00                  |                         |                    |            |                |               | 469m | South<br>West |
| GW024<br>064 | 10BL017<br>310,<br>10WA11<br>2886 | Spear        | Private       | Domestic              | General<br>Use      |      | 01/01/1966       | 9.10                  | 9.10                    | Good               |            |                |               | 473m | South         |
| GW110<br>445 | 10BL602<br>871,<br>10WA11<br>4549 | Spear        | Private       | Domestic              | Domestic            |      | 26/05/2009       | 6.00                  | 6.00                    |                    |            |                |               | 477m | South<br>West |
| GW108<br>721 | 10BL601<br>579,<br>10WA11<br>4381 | Spear        | Private       | Domestic              | Domestic            |      | 16/04/2009       | 8.54                  | 8.54                    | Good               | 4.58       | 1.000          |               | 486m | South<br>West |
| GW107<br>356 | 10BL164<br>565,<br>10WA11<br>3812 | Spear        | Private       | Domestic              | Domestic            |      | 11/08/2005       | 6.00                  | 6.00                    | Good               | 4.00       | 0.500          |               | 488m | South<br>West |
| GW105<br>768 | 10BL162<br>582,<br>10WA11<br>3453 | Spear        | Private       | Domestic              | Domestic            |      | 15/12/2003       | 7.01                  | 7.02                    |                    |            | 1.000          |               | 492m | South<br>West |
| GW106<br>659 | 10BL164<br>037,<br>10WA11<br>3720 | Spear        | Private       | Domestic              | Domestic            |      | 23/11/2004       | 7.63                  | 7.63                    |                    | 4.58       | 1.000          |               | 498m | South<br>West |
| GW108<br>970 | 10BL602<br>144,<br>10WA11<br>4449 | Spear        | Private       | Domestic              | Domestic            |      | 26/06/2008       | 8.23                  |                         | Good               | 4.58       | 1.000          |               | 499m | South<br>West |
| GW107<br>333 | 10BL165<br>282,<br>10WA11<br>3946 | Spear        | Private       | Domestic              | Domestic            |      | 21/06/2005       | 10.37                 | 10.37                   | Good               | 7.01       | 1.000          |               | 511m | South         |
| GW105<br>855 | 10BL163<br>249,<br>10WA11<br>3545 | Bore         |               | Domestic              |                     |      | 04/05/2005       |                       |                         |                    |            |                |               | 515m | South<br>West |

| GW No.       | Licence<br>No                     | Work<br>Type | Owner<br>Type | Authorised<br>Purpose | Intended<br>Purpose | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist | Dir           |
|--------------|-----------------------------------|--------------|---------------|-----------------------|---------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|------|---------------|
| GW109<br>926 | 10BL602<br>790,<br>10WA11<br>4538 | Spear        | Private       | Domestic              | Domestic            |      | 02/02/2009       | 9.00                  | 9.00                    | Good               | 6.00       | 0.500          |               | 542m | South<br>West |
| GW111<br>311 | 10BL601<br>516,<br>10WA11<br>4366 | Spear        | Private       | Domestic              | Domestic            |      | 15/04/2007       | 9.15                  | 9.15                    | good               | 5.80       | 1.000          |               | 544m | South<br>West |
| GW072<br>405 | 10BL156<br>076,<br>10WA11<br>3017 | Spear        | Private       | Domestic              | Domestic            |      | 14/04/1997       | 8.00                  | 8.00                    | Good               |            |                |               | 546m | South         |
| GW113<br>041 | 10BL602<br>369,<br>10WA11<br>4498 | Spear        | Private       | Domestic              | Domestic            |      | 01/02/2008       | 7.00                  | 7.00                    |                    |            |                |               | 549m | South<br>West |
| GW110<br>554 | 10BL603<br>346,<br>10WA11<br>4578 | Spear        | Private       | Domestic              | Domestic            |      | 17/11/2009       | 9.00                  | 9.00                    | Good               | 7.00       | 0.500          |               | 550m | South         |
| GW106<br>631 | 10BL163<br>920,<br>10WA11<br>3706 | Spear        | Private       | Domestic              | Domestic            |      | 08/11/2004       | 8.85                  | 8.85                    |                    | 5.18       | 1.000          |               | 551m | South<br>West |
| GW107<br>507 | 10BL163<br>599,<br>10WA11<br>3626 | Spear        | Private       | Domestic              | Domestic            |      | 07/10/2005       | 9.00                  | 9.00                    | Good               | 7.00       | 0.500          |               | 573m | South         |
| GW031<br>364 | 10BL024<br>145,<br>10WA11<br>2999 | Spear        | Private       | Domestic              | Domestic            |      | 01/04/1969       | 5.40                  | 5.40                    |                    | 3.30       | 0.150          |               | 580m | South<br>West |
| GW107<br>626 | 10BL163<br>598,<br>10WA11<br>3625 | Spear        | Private       | Domestic              | Domestic            |      | 07/10/2005       | 9.00                  | 9.00                    |                    | 7.00       | 0.500          |               | 586m | South         |
| GW105<br>995 | 10BL162<br>386,<br>10WA11<br>3420 | Spear        | Private       | Domestic              | Domestic            |      | 22/04/2004       | 4.58                  | 4.58                    |                    | 1.52       | 1.000          |               | 597m | West          |
| GW108<br>539 | 10BL601<br>039,<br>10WA11<br>4269 | Spear        | Private       | Domestic              | Domestic            |      | 22/01/2007       | 7.00                  | 7.00                    | Good               | 5.00       | 0.500          |               | 600m | South<br>West |
| GW024<br>585 | 10BL018<br>849,<br>10WA11<br>2972 | Spear        | Private       | Domestic              | General<br>Use      |      | 01/01/1966       | 7.00                  | 7.00                    | Good               |            |                |               | 603m | South<br>West |
| GW106<br>067 | 10BL163<br>237,<br>10WA11<br>3541 | Spear        | Private       | Domestic              | Domestic            |      | 06/07/2004       | 10.06                 | 10.07                   |                    | 7.01       | 1.000          |               | 604m | South         |
| GW110<br>844 | 10BL164<br>089,<br>10WA11<br>3726 | Spear        | Private       | Domestic              | Domestic            |      | 24/11/2004       | 5.49                  | 5.49                    | Good               | 1.83       | 1.000          |               | 613m | South<br>West |
| GW111<br>231 | 10BL164<br>178,<br>10WA11<br>3748 | Spear        | Private       | Domestic              | Domestic            |      | 01/01/2007       | 5.50                  | 5.50                    |                    |            |                |               | 614m | South         |
| GW107<br>346 | 10BL164<br>916,<br>10WA11<br>3888 | Spear        | Private       | Domestic              | Domestic            |      | 17/09/2005       | 9.76                  | 9.76                    | Good               | 6.41       | 1.000          |               | 624m | South<br>West |
| GW106<br>425 | 10BL163<br>593,<br>10WA11<br>3622 | Spear        | Private       | Domestic              | Domestic            |      | 03/08/2007       | 7.00                  | 7.00                    |                    |            |                |               | 625m | South<br>West |
| GW109<br>166 | 10BL602<br>412,<br>10WA11<br>4508 | Spear        | Private       | Domestic              | Domestic            |      | 06/08/2008       | 8.23                  |                         | Good               | 4.88       | 1.000          |               | 628m | South<br>West |
| GW108<br>252 | 10BL600<br>656,<br>10WA11<br>4190 | Spear        | Private       | Domestic              | Domestic            |      | 31/10/2006       | 9.15                  | 9.15                    |                    | 5.18       | 1.000          |               | 638m | South<br>West |

| GW No.       | Licence<br>No                     | Work<br>Type | Owner<br>Type | Authorised<br>Purpose           | Intended<br>Purpose             | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist | Dir           |
|--------------|-----------------------------------|--------------|---------------|---------------------------------|---------------------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|------|---------------|
| GW108<br>171 | 10BL600<br>470,<br>10WA11<br>4154 | Spear        | Private       | Domestic                        | Domestic                        |      | 23/08/2006       | 9.00                  | 9.00                    |                    |            |                |               | 655m | South         |
| GW100<br>965 | 10BL156<br>934,<br>10WA11<br>3085 | Spear        | Private       | Domestic                        | Domestic                        |      | 23/08/1995       | 8.23                  | 8.23                    | Good               | 5.18       | 1.000          |               | 656m | South<br>West |
| GW110<br>917 | 10BL601<br>419,<br>10WA11<br>4343 | Spear        | Private       | Domestic                        | Domestic                        |      | 16/06/2007       | 8.54                  | 8.54                    | good               | 5.49       | 1.000          |               | 661m | South<br>West |
| GW107<br>302 | 10BL165<br>309,<br>10WA11<br>3957 | Spear        | Private       | Domestic                        | Domestic                        |      | 15/08/2005       | 6.00                  | 6.00                    |                    |            |                |               | 667m | South<br>West |
| GW107<br>318 | 10BL164<br>830,<br>10WA11<br>3866 | Spear        | Private       | Domestic                        | Domestic                        |      | 25/04/2005       | 7.63                  | 7.63                    | Good               | 4.58       | 1.000          |               | 669m | South<br>West |
| GW101<br>032 | 10BL158<br>261,<br>10WA11<br>3215 | Spear        | Private       | Domestic                        | Domestic                        |      | 21/11/1997       | 7.32                  | 7.32                    | Good               |            | 1.000          |               | 671m | South<br>West |
| GW111<br>224 | 10BL604<br>178,<br>10WA11<br>4606 | Spear        | Private       | Domestic                        | Domestic                        |      | 22/08/2010       | 6.00                  | 6.00                    | good               | 2.00       | 0.500          |               | 679m | West          |
| GW107<br>306 | 10BL164<br>707,<br>10WA11<br>3839 | Spear        | Private       | Domestic                        | Domestic                        |      | 06/09/2005       | 6.00                  | 6.00                    |                    |            |                |               | 679m | South<br>West |
| GW105<br>725 | 10BL162<br>465,<br>10WA11<br>3431 | Spear        | Private       | Domestic                        | Domestic                        |      | 28/01/2004       | 8.85                  | 8.85                    |                    | 5.80       | 1.000          |               | 681m | South<br>West |
| GW106<br>274 | 10BL163<br>290,<br>10WA11<br>3552 | Spear        | Private       | Domestic                        | Domestic                        |      | 07/06/2004       | 8.23                  | 8.24                    | Good               | 4.88       | 1.000          |               | 694m | South<br>West |
| GW108<br>434 | 10BL600<br>980,<br>10WA11<br>4256 | Spear        | Private       | Domestic                        | Domestic                        |      | 16/01/2007       | 8.54                  | 8.54                    | Good               |            | 1.000          |               | 697m | South<br>West |
| GW107<br>121 | 10BL164<br>816,<br>10WA11<br>3864 | Spear        | Private       | Domestic                        | Domestic                        |      | 06/04/2005       | 5.00                  | 5.00                    |                    |            |                |               | 698m | South<br>West |
| GW107<br>541 | 10BL165<br>731,<br>10WA11<br>4035 | Spear        | Private       | Domestic                        | Domestic                        |      | 30/10/2005       | 6.00                  | 6.00                    |                    |            |                |               | 715m | South<br>West |
| GW108<br>814 | 10BL601<br>413,<br>10WA11<br>4341 | Spear        | Private       | Domestic                        | Domestic                        |      | 24/04/2008       | 8.23                  |                         |                    |            |                |               | 717m | South<br>West |
| GW110<br>897 | 10BL603<br>865,<br>10WA11<br>4599 | Spear        | Private       | Domestic                        | Domestic                        |      | 25/05/2010       | 8.54                  | 8.54                    | good               | 5.18       | 1.000          |               | 719m | South<br>West |
| GW106<br>982 | 10BL164<br>880,<br>10WA11<br>4733 | Bore         |               | Recreation<br>(groundwater<br>) | Recreation<br>(groundwate<br>r) |      | 07/02/2005       | 5.00                  | 5.00                    |                    |            |                |               | 722m | West          |
| GW102<br>991 | 10BL155<br>245,<br>10WA11<br>3016 | Bore         |               | Domestic                        |                                 |      | 20/07/2000       |                       | 5.00                    |                    |            |                |               | 727m | South<br>West |
| GW107<br>636 | 10BL165<br>590,<br>10WA11<br>3999 | Bore         | Private       | Domestic                        | Domestic                        |      | 27/11/1993       | 6.00                  | 6.00                    |                    |            |                |               | 727m | South         |
| GW108<br>599 | 10BL601<br>378,<br>10WA11<br>4332 | Spear        | Private       | Domestic                        | Domestic                        |      | 04/03/2007       | 12.00                 | 12.00                   |                    |            |                |               | 744m | South<br>West |

| GW No.       | Licence<br>No                     | Work<br>Type | Owner<br>Type | Authorised<br>Purpose | Intended<br>Purpose | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist | Dir           |
|--------------|-----------------------------------|--------------|---------------|-----------------------|---------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|------|---------------|
| GW108<br>096 | 10BL162<br>751,<br>10WA11<br>3482 | Spear        | Private       | Domestic              | Domestic            |      | 20/04/2004       | 7.32                  | 7.32                    |                    | 4.20       | 1.000          |               | 747m | South<br>West |
| GW101<br>765 | 10BL157<br>361,<br>10WA11<br>3151 | Bore         |               | Domestic              | Domestic            |      | 01/09/1995       | 8.00                  | 8.00                    |                    |            |                |               | 747m | South<br>West |
| GW107<br>972 | 10BL600<br>190,<br>10WA11<br>4119 | Spear        | Private       | Domestic              | Domestic            |      | 10/04/2006       | 7.00                  | 7.00                    |                    |            |                |               | 756m | South<br>West |
| GW104<br>901 | 10BL157<br>110,<br>10WA11<br>3114 | Bore         | Private       | Domestic              | Domestic            |      | 27/09/1995       | 7.63                  | 7.63                    | Good               | 5.18       | 1.000          |               | 758m | South         |
| GW108<br>578 | 10BL601<br>445,<br>10WA11<br>4351 | Spear        | Private       | Domestic              | Domestic            |      | 20/03/2007       | 6.00                  | 6.00                    |                    |            |                |               | 761m | South<br>West |
| GW100<br>444 | 10BL157<br>807,<br>10WA11<br>3179 | Spear        | Private       | Domestic              | Domestic            |      | 22/11/1996       | 5.49                  | 5.49                    | Good               | 1.83       | 1.000          |               | 772m | West          |
| GW107<br>511 | 10BL165<br>586,<br>10WA11<br>3998 | Spear        | Private       | Domestic              | Domestic            |      | 15/10/2005       | 8.23                  | 8.24                    | Good               | 5.18       | 1.000          |               | 780m | South<br>West |
| GW105<br>550 | 10BL162<br>376,<br>10WA11<br>3418 | Bore         |               | Domestic              | Domestic            |      | 01/12/2003       | 8.85                  | 8.85                    |                    | 5.79       | 1.000          |               | 781m | South<br>West |
| GW108<br>454 | 10BL601<br>082,<br>10WA11<br>4283 | Spear        | Private       | Domestic              | Domestic            |      | 30/01/2007       | 9.46                  | 9.46                    | Good               | 6.41       | 1.000          |               | 788m | South<br>West |
| GW108<br>717 | 10BL601<br>596,<br>10WA11<br>4385 | Spear        | Private       | Domestic              | Domestic            |      | 06/04/2007       | 5.18                  | 5.19                    | Good               | 1.52       | 1.000          |               | 798m | West          |
| GW017<br>475 | 10BL008<br>275,<br>10WA11<br>2790 | Spear        | Private       | Domestic              | General<br>Use      |      | 01/01/1958       | 7.60                  | 7.60                    |                    |            |                |               | 798m | South<br>West |
| GW108<br>625 | 10BL600<br>075,<br>10WA11<br>4092 | Spear        | Private       | Domestic              | Domestic            |      | 22/11/2007       | 9.46                  | 9.46                    | Good               | 5.49       | 1.000          |               | 803m | South<br>West |
| GW107<br>442 | 10BL165<br>472,<br>10WA11<br>3985 | Spear        | Private       | Domestic              | Domestic            |      | 08/08/2005       | 9.15                  | 9.15                    | Good               | 6.10       | 1.000          |               | 807m | South<br>West |
| GW109<br>697 | 10BL165<br>067,<br>10WA11<br>3916 | Bore         | Private       | Domestic              | Domestic            |      | 07/05/2008       | 6.10                  | 6.10                    | Good               | 2.13       | 1.000          |               | 809m | South<br>West |
| GW101<br>818 | 10BL157<br>353,<br>10WA11<br>3146 | Bore         |               | Domestic              | Domestic            |      | 30/05/1995       | 5.50                  | 5.50                    |                    |            |                |               | 812m | South<br>West |
| GW107<br>425 | 10BL165<br>249,<br>10WA11<br>3938 | Spear        | Private       | Domestic              | Domestic            |      | 08/08/2005       | 9.00                  | 9.00                    | Good               | 7.00       | 0.500          |               | 814m | South<br>West |
| GW026<br>375 | 10BL017<br>634,<br>10WA11<br>2918 | Bore         | Private       | Domestic              | Not Known           |      | 01/09/1966       | 7.00                  | 7.00                    | Good               |            |                |               | 816m | South         |
| GW101<br>222 | 10BL158<br>318,<br>10WA11<br>3220 | Spear        | Private       | Domestic              | Domestic            |      | 15/12/1997       | 7.78                  | 7.78                    | Good               | 5.80       | 1.000          |               | 829m | South<br>West |
| GW108<br>488 | 10BL600<br>561,<br>10WA11<br>4166 | Spear        | Private       | Domestic              | Domestic            |      | 15/11/2006       | 9.76                  | 9.76                    | Good               | 6.71       | 1.000          |               | 832m | South<br>West |

| GW No.       | Licence<br>No                     | Work<br>Type | Owner<br>Type | Authorised<br>Purpose | Intended<br>Purpose | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist | Dir           |
|--------------|-----------------------------------|--------------|---------------|-----------------------|---------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|------|---------------|
| GW109<br>258 | 10BL164<br>850,<br>10WA11<br>3870 | Spear        | Private       | Domestic              | Domestic            |      | 22/08/2008       | 7.93                  |                         | Good               |            | 1.000          |               | 833m | South<br>West |
| GW108<br>411 | 10BL600<br>725,<br>10WA11<br>4205 | Spear        | Private       | Domestic              | Domestic            |      | 19/01/2007       | 8.54                  | 8.54                    | Good               | 5.18       | 1.000          |               | 837m | South<br>West |
| GW111<br>296 | 10BL601<br>515,<br>10WA11<br>4365 | Spear        | Private       | Domestic              | Domestic            |      | 20/04/2010       | 5.49                  | 5.49                    | 6000               | 1.52       | 1.000          |               | 838m | South<br>West |
| GW110<br>440 | 10BL602<br>908,<br>10WA11<br>4557 | Spear        | Private       | Domestic              | Domestic            |      | 26/02/2009       | 9.00                  | 9.00                    | Good               | 7.00       | 0.500          |               | 847m | South<br>West |
| GW110<br>220 | 10BL600<br>361,<br>10WA11<br>4141 | Spear        | Private       | Domestic              | Domestic            |      | 07/09/2006       | 6.00                  | 6.00                    |                    |            |                |               | 856m | South<br>West |
| GW111<br>741 | 10WA11<br>7312                    | Bore         | Private       | Domestic              | Domestic            |      | 27/02/2012       | 11.59                 | 11.59                   | good               | 6.41       | 1.000          |               | 862m | South<br>West |
| GW110<br>953 | 10BL601<br>610,<br>10WA11<br>4388 | Spear        | Private       | Domestic              | Domestic            |      | 17/06/2010       | 8.00                  | 8.00                    |                    | 2.00       | 2.500          |               | 865m | South<br>West |
| GW107<br>746 | 10BL164<br>632,<br>10WA11<br>3824 | Spear        | Private       | Domestic              | Domestic            |      | 10/01/2006       | 8.00                  | 8.00                    |                    |            |                |               | 865m | South<br>West |
| GW107<br>852 | 10BL163<br>741,<br>10WA11<br>3669 | Spear        | Private       | Domestic              | Domestic            |      | 01/01/2003       | 6.00                  | 6.00                    |                    |            |                |               | 865m | South<br>West |
| GW101<br>756 | 10BL159<br>004,<br>10WA11<br>3269 | Bore         |               | Domestic              | Domestic            |      | 18/01/1999       | 6.10                  | 6.10                    | Good               | 3.36       | 1.000          |               | 866m | South<br>West |
| GW111<br>498 | 10BL602<br>489,<br>10WA11<br>4516 | Spear        | Private       | Domestic              | Domestic            |      | 08/05/2008       | 11.59                 | 11.59                   | good               | 6.41       | 1.000          |               | 873m | South<br>West |
| GW107<br>985 | 10BL600<br>160,<br>10WA11<br>4114 | Spear        | Private       | Domestic              | Domestic            |      | 21/03/2006       | 5.49                  | 5.49                    |                    | 2.13       | 1.000          |               | 874m | South<br>West |
| GW110<br>656 | 10BL601<br>154,<br>10WA11<br>4292 | Spear        | Private       | Domestic              | Domestic            |      | 24/02/2007       | 7.93                  | 7.93                    | Good               | 4.88       | 1.000          |               | 880m | South<br>West |
| GW107<br>367 | 10BL165<br>564,<br>10WA11<br>3993 | Spear        | Private       | Domestic              | Domestic            |      | 20/09/2005       | 7.00                  | 7.00                    |                    |            |                |               | 882m | South<br>West |
| GW101<br>433 | 10BL158<br>419,<br>10WA11<br>3235 | Spear        | Private       | Domestic              | Domestic            |      | 15/01/1998       | 5.49                  | 5.49                    | Good               | 2.75       | 1.000          |               | 889m | South<br>West |
| GW109<br>246 | 10BL602<br>491,<br>10WA11<br>4518 | Spear        | Private       | Domestic              | Domestic            |      | 20/08/2008       | 11.59                 |                         | Good               | 6.41       | 1.000          |               | 892m | South         |
| GW110<br>528 | 10BL603<br>384,<br>10WA11<br>4580 | Spear        | Private       | Domestic              | Domestic            |      | 19/10/2009       | 6.71                  | 6.71                    | Good               | 3.66       | 1.000          |               | 906m | South<br>West |
| GW106<br>233 | 10BL163<br>568,<br>10WA11<br>3613 | Spear        | Private       | Domestic              | Domestic            |      | 28/05/2005       | 5.00                  | 5.00                    |                    |            |                |               | 910m | South<br>West |
| GW107<br>870 | 10BL600<br>133,<br>10WA11<br>4107 | Spear        | Private       | Domestic              | Domestic            |      | 13/03/2004       | 4.27                  | 4.27                    |                    | 1.52       | 1.000          |               | 914m | South<br>West |

| GW No.       | Licence<br>No  | Work<br>Type | Owner<br>Type | Authorised<br>Purpose                                     | Intended<br>Purpose                            | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist | Dir           |
|--------------|--|--------------|---------------|---|--|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|------|---------------|
| GW111<br>743 | 10BL604<br>393,<br>10WA11<br>4612                    | Spear        | Private       | Domestic  | Domestic                                       |      | 28/03/2011       | 3.96                  | 3.97                    | good               | 1.52       | 1.000          |               | 922m | South<br>West |
| GW108<br>832 | 10BL601<br>316,<br>10WA11<br>4318                    | Spear        | Private       | Domestic  | Domestic                                       |      | 24/04/2008       | 6.10                  |                         |                    | 3.36       | 1.000          |               | 927m | South<br>West |
| GW110<br>654 | 10BL600<br>671,<br>10WA11<br>4192                    | Spear        | Private       | Domestic  | Domestic                                       |      | 28/11/2006       | 7.93                  | 7.93                    | Good               | 3.96       | 1.000          |               | 930m | South<br>West |
| GW111<br>682 | 10BL163<br>782,<br>10WA11<br>3678                    | Spear        | Private       | Domestic  | Domestic                                       |      | 01/06/2006       | 9.00                  | 9.00                    |                    |            | 0.660          |               | 931m | South<br>West |
| GW106<br>309 | 10BL163<br>680,<br>10WA11<br>3649                    | Spear        | Private       | Domestic  | Domestic                                       |      | 02/09/2004       | 8.85                  | 8.85                    |                    | 5.80       | 1.000          |               | 932m | South<br>West |
| GW109<br>004 | 10BL601<br>346,<br>10WA11<br>4323                    | Bore         | Private       | Domestic  | Domestic                                       |      | 09/07/2008       | 6.00                  |                         | Good               | 4.00       | 0.500          |               | 936m | South<br>West |
| GW111<br>710 | 10BL603<br>004,<br>10WA11<br>4565                    | Spear        | Private       | Domestic  | Domestic                                       |      | 28/11/2010       | 7.00                  | 7.00                    | good               | 5.00       | 0.500          |               | 939m | South<br>West |
| GW110<br>659 | 10BL163<br>882,<br>10WA11<br>3701                    | Spear        | Private       | Domestic  | Domestic                                       |      | 01/01/2004       | 9.00                  |                         |                    | 4.00       | 0.500          |               | 940m | South<br>West |
| GW112<br>396 | 10WA11<br>8589                                       | Spear        | Private       | Domestic  | Domestic                                       |      | 11/03/2013       | 7.00                  | 7.00                    |                    | 4.00       | 0.500          |               | 941m | South<br>West |
| GW023<br>285 | 10BL016<br>680,<br>10WA11<br>2834                    | Bore         | Private       | Domestic  | General<br>Use                                 |      | 01/11/1965       | 5.70                  | 5.80                    |                    |            |                |               | 946m | South<br>West |
| GW107<br>053 | 10BL162<br>715,<br>10WA11<br>3475                    | Spear        | Private       | Domestic  | Domestic                                       |      | 02/04/2005       | 9.00                  | 9.00                    |                    |            |                |               | 950m | South<br>West |
| GW109<br>455 | 10BL164<br>582,<br>10WA11<br>3814                    | Spear        | Private       | Domestic  | Domestic                                       |      | 19/02/2005       | 9.15                  |                         | Good               | 6.10       | 1.000          |               | 951m | South<br>West |
| GW111<br>316 | 10BL602<br>906,<br>10BL604<br>791,<br>10CA11<br>7813 | Bore         | Private       | Irrigation,<br>Recreation<br>(groundwater<br>), Test Bore | Irrigation,<br>Recreation<br>(groundwate<br>r) |      | 01/03/2010       | 162.00                | 162.00                  | 1400               | 4.00       | 2.000          |               | 952m | North<br>West |
| GW024<br>319 | 10BL018<br>628,<br>10WA11<br>2961                    | Spear        | Private       | Domestic  | General<br>Use                                 |      | 01/08/1966       | 4.50                  | 4.60                    |                    |            |                |               | 952m | South<br>West |
| GW106<br>450 | 10BL164<br>013                                       | Spear        | Private       | Domestic  | Domestic                                       |      | 08/10/2004       | 2.00                  | 2.00                    |                    |            |                |               | 955m | West          |
| GW106<br>778 | 10BL163<br>788,<br>10WA11<br>3682                    | Spear        | Private       | Domestic  | Domestic                                       |      | 29/08/2004       | 7.63                  | 7.63                    | Good               | 4.58       | 1.000          |               | 957m | South<br>West |
| GW101<br>827 | 10BL157<br>441,<br>10WA11<br>3156                    | Bore         |               | Domestic  | Domestic                                       |      | 03/03/1999       | 7.93                  | 7.93                    | Good               | 2.44       | 0.800          |               | 957m | South<br>West |
| GW111<br>117 | 10BL604<br>102,<br>10WA11<br>4602                    | Spear        | Private       | Domestic  | Domestic                                       |      | 25/08/2010       | 8.54                  | 8.54                    | good               | 4.88       | 1.000          |               | 960m | South<br>West |
| GW108<br>441 | 10BL600<br>981,<br>10WA11<br>4257                    | Spear        | Private       | Domestic  | Domestic                                       |      | 17/01/2007       | 8.54                  | 8.54                    | Good               |            | 1.000          |               | 964m | South<br>West |

| GW No.       | Licence<br>No                     | Work<br>Type   | Owner<br>Type | Authorised<br>Purpose           | Intended<br>Purpose             | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist  | Dir           |
|--------------|-----------------------------------|----------------|---------------|---------------------------------|---------------------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|-------|---------------|
| GW108<br>534 | 10BL600<br>971,<br>10WA11<br>4254 | Spear          | Private       | Domestic                        | Domestic                        |      | 30/01/2007       | 7.00                  | 7.00                    | Good               | 5.00       | 0.500          |               | 966m  | South<br>West |
| GW104<br>656 | 10BL161<br>282                    | Bore           | Private       | Monitoring<br>Bore              | Monitoring<br>Bore              |      | 10/07/2002       | 8.00                  | 8.00                    | 300                | 7.00       |                |               | 973m  | South<br>West |
| GW106<br>897 | 10BL164<br>361,<br>10WA11<br>3781 | Spear          | Private       | Domestic                        | Domestic                        |      | 11/01/2005       | 6.00                  | 6.00                    | Good               | 4.00       | 0.500          |               | 980m  | South<br>West |
| GW104<br>655 | 10BL161<br>282                    | Bore           | Private       | Monitoring<br>Bore              | Monitoring<br>Bore              |      | 10/07/2002       | 8.00                  | 8.00                    | 300                | 7.00       |                |               | 987m  | South<br>West |
| GW109<br>581 | 10BL165<br>433,<br>10WA11<br>3976 | Spear          | Private       | Domestic                        | Domestic                        |      | 17/08/2005       | 7.32                  | 7.32                    | Good               | 4.27       | 1.000          |               | 987m  | South<br>West |
| GW107<br>317 | 10BL165<br>370,<br>10WA11<br>3968 | Spear          | Private       | Domestic                        | Domestic                        |      | 18/08/2005       | 7.32                  | 7.32                    | Good               | 3.90       | 1.000          |               | 992m  | South<br>West |
| GW104<br>654 | 10BL161<br>282                    | Bore           | Private       | Monitoring<br>Bore              | Monitoring<br>Bore              |      | 10/07/2002       | 8.00                  | 8.00                    | 300                | 7.00       |                |               | 995m  | South<br>West |
| GW100<br>297 | 10BL154<br>886,<br>10WA11<br>3014 | Spear          | Private       | Domestic                        | Domestic                        |      | 10/08/1995       | 5.00                  | 5.00                    |                    |            |                |               | 995m  | South<br>West |
| GW104<br>653 | 10BL161<br>282                    | Bore           | Private       | Monitoring<br>Bore              | Monitoring<br>Bore              |      | 10/07/2002       | 8.00                  | 8.00                    | 334                | 7.00       |                |               | 998m  | South<br>West |
| GW108<br>573 | 10BL601<br>408,<br>10WA11<br>4340 | Bore           | Private       | Domestic                        | Domestic                        |      | 06/03/2007       | 7.93                  | 7.93                    | Good               | 3.96       | 1.000          |               | 999m  | South<br>West |
| GW106<br>277 | 10BL163<br>520,<br>10WA11<br>3598 | Spear          |               | Domestic                        | Domestic                        |      | 09/09/2004       | 6.50                  | 6.50                    |                    |            |                |               | 1000m | South<br>West |
| GW104<br>652 | 10BL161<br>282                    | Bore           | Private       | Monitoring<br>Bore              | Monitoring<br>Bore              |      | 10/07/2002       | 8.00                  | 8.00                    | 300                | 6.50       |                |               | 1002m | South         |
| GW104<br>657 | 10BL161<br>282                    | Bore           | Private       | Monitoring<br>Bore              | Monitoring<br>Bore              |      | 10/07/2002       | 8.00                  | 8.00                    | 300                | 6.00       |                |               | 1004m | South         |
| GW106<br>507 | 10BL164<br>258,<br>10WA11<br>3766 | Spear          | Private       | Domestic                        | Domestic                        |      | 15/10/2004       | 7.00                  | 7.00                    | Good               | 4.00       | 0.500          |               | 1009m | South<br>West |
| GW112<br>389 | 10WA11<br>7556                    | Spear          | Private       | Domestic                        | Domestic                        |      | 08/03/2013       | 9.00                  | 9.00                    |                    | 5.00       | 0.500          |               | 1020m | South<br>West |
| GW016<br>114 | 10BL008<br>398,<br>10WA11<br>4695 | Bore           | Private       | Recreation<br>(groundwater<br>) | Recreation<br>(groundwate<br>r) |      | 01/11/1957       | 13.70                 | 13.70                   |                    |            |                |               | 1022m | South<br>West |
| GW107<br>370 | 10BL165<br>546,<br>10WA11<br>3989 | Bore           | Private       | Domestic                        | Domestic                        |      | 25/10/2005       | 7.00                  | 7.00                    |                    |            |                |               | 1026m | South<br>West |
| GW107<br>313 | 10BL165<br>085,<br>10WA11<br>3921 | Spear          | Private       | Domestic                        | Domestic                        |      | 18/04/2005       | 9.15                  | 9.15                    |                    | 6.49       | 1.000          |               | 1035m | South<br>West |
| GW107<br>628 | 10BL163<br>906,<br>10WA11<br>3704 | Spear          | Private       | Domestic                        | Domestic                        |      | 30/05/2005       | 7.00                  | 7.00                    |                    |            |                |               | 1037m | South<br>West |
| GW108<br>870 | 10BL164<br>936,<br>10CA11<br>4737 | Excav<br>ation | Private       | Irrigation                      | Irrigation                      |      | 12/05/2008       | 5.00                  |                         |                    |            |                |               | 1041m | West          |
| GW023<br>135 | 10BL016<br>657                    | Spear          | Private       | Irrigation                      | General<br>Use                  |      | 01/12/1965       | 7.00                  | 7.00                    |                    |            |                |               | 1051m | South<br>West |
| GW106<br>826 | 10BL162<br>520,<br>10WA11<br>3438 | Spear          | Private       | Domestic                        | Domestic                        |      | 11/03/2005       | 6.00                  | 6.00                    | Good               | 3.00       | 0.500          |               | 1068m | South<br>West |

| GW No.       | Licence<br>No  | Work<br>Type | Owner<br>Type | Authorised<br>Purpose                      | Intended<br>Purpose             | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist  | Dir           |
|--------------|--|--------------|---------------|--|---------------------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|-------|---------------|
| GW105<br>982 | 10BL162<br>506,<br>10WA11<br>3437                    | Spear        | Private       | Domestic                                   | Domestic                        |      | 09/07/2004       | 7.00                  | 7.00                    | Good               | 5.00       | 0.500          |               | 1071m | South<br>West |
| GW110<br>558 | 10BL603<br>050,<br>10WA11<br>4567                    | Spear        | Private       | Domestic                                   | Domestic                        |      | 10/11/2009       | 7.00                  | 7.00                    | Good               | 5.00       | 0.500          |               | 1080m | South<br>West |
| GW072<br>968 |  | Spear        | Private       |  | Domestic                        |      | 21/02/1995       | 8.50                  | 8.50                    | Good               |            |                |               | 1082m | South<br>West |
| GW108<br>597 | 10BL601<br>369,<br>10WA11<br>4328                    | Spear        | Private       | Domestic                                   | Domestic                        |      | 27/02/2007       | 8.54                  | 8.54                    | Good               | 5.49       | 1.000          |               | 1086m | South<br>West |
| GW114<br>560 | 10WA11<br>8862                                       | Spear        | Private       | Domestic                                   | Domestic                        |      | 23/01/2014       | 8.85                  | 8.85                    | Good               | 5.49       | 1.000          |               | 1089m | South<br>West |
| GW107<br>720 | 10BL164<br>767,<br>10WA11<br>3855                    | Spear        | Private       | Domestic                                   |                                 |      | 04/01/2007       |                       |                         |                    |            |                |               | 1091m | South<br>West |
| GW108<br>277 | 10BL165<br>952,<br>10WA11<br>4066                    | Bore         |               | Domestic                                   | Domestic                        |      | 01/01/1993       | 6.00                  |                         |                    |            | 21.00<br>0     |               | 1101m | South<br>West |
| GW106<br>352 | 10BL163<br>539,<br>10WA11<br>3605                    | Spear        | Private       | Domestic                                   | Domestic                        |      | 27/09/2004       | 9.15                  | 9.15                    |                    | 6.41       | 1.000          |               | 1112m | South<br>West |
| GW107<br>689 | 10BL164<br>315,<br>10WA11<br>3775                    | Spear        | Private       | Domestic                                   | Domestic                        |      | 20/11/2005       | 7.00                  | 7.00                    |                    |            |                |               | 1112m | South<br>West |
| GW111<br>091 | 10BL601<br>670,<br>10WA11<br>4404                    | Spear        | Private       | Domestic                                   | Monitoring<br>Bore              |      | 24/08/2007       | 7.00                  | 7.00                    |                    |            |                |               | 1117m | South<br>West |
| GW109<br>092 | 10BL600<br>227,<br>10BL602<br>308,<br>10WA11<br>4745 | Bore         | Private       | Recreation<br>(groundwater<br>), Test Bore | Recreation<br>(groundwate<br>r) |      | 22/07/2008       | 4.00                  | 4.00                    | Good               | 2.00       | 0.500          |               | 1118m | South<br>West |
| GW107<br>780 | 10BL165<br>900,<br>10WA11<br>4057                    | Spear        | Private       | Domestic                                   | Domestic                        |      | 08/02/2006       | 8.54                  | 8.54                    | Good               | 5.49       | 1.000          |               | 1118m | South<br>West |
| GW106<br>891 | 10BL164<br>384,<br>10WA11<br>3787                    | Spear        | Private       | Domestic                                   | Domestic                        |      | 28/12/2004       | 6.00                  | 6.00                    |                    |            |                |               | 1137m | South<br>West |
| GW106<br>899 | 10BL163<br>996,<br>10WA11<br>3717                    | Spear        | Private       | Domestic                                   | Domestic                        |      | 22/11/2005       | 9.46                  | 9.46                    | Good               | 6.10       | 1.000          |               | 1138m | South<br>West |
| GW107<br>350 | 10BL165<br>077,<br>10WA11<br>3918                    | Spear        | Private       | Domestic                                   | Domestic                        |      | 24/09/2005       | 9.46                  | 9.46                    |                    | 5.80       | 1.000          |               | 1143m | South<br>West |
| GW111<br>888 | 10BL601<br>024,<br>10WA11<br>4266                    | Spear        | Private       | Domestic                                   | Domestic                        |      | 17/12/2006       | 8.80                  | 8.80                    |                    |            |                |               | 1147m | South<br>West |
| GW108<br>432 | 10BL600<br>966,<br>10WA11<br>4252                    | Spear        | Private       | Domestic                                   | Domestic                        |      | 17/01/2007       | 7.93                  | 7.93                    | Good               | 4.88       | 1.000          |               | 1175m | South<br>West |
| GW108<br>631 | 10BL165<br>236,<br>10WA11<br>3937                    | Spear        | Private       | Domestic                                   | Domestic                        |      | 16/08/2005       | 7.00                  | 7.00                    |                    |            |                |               | 1187m | South<br>West |
| GW023<br>191 | 10BL016<br>920,<br>10WA11<br>2851                    | Spear        | Private       | Domestic                                   | General<br>Use                  |      |                  | 3.60                  | 3.70                    |                    |            |                |               | 1190m | North<br>West |

| GW No.       | Licence<br>No                     | Work<br>Type | Owner<br>Type | Authorised<br>Purpose    | Intended<br>Purpose | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist  | Dir           |
|--------------|-----------------------------------|--------------|---------------|--------------------------|---------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|-------|---------------|
| GW107<br>153 | 10BL164<br>915,<br>10WA11<br>3887 | Spear        | Private       | Domestic                 | Domestic            |      | 30/05/2005       | 8.23                  | 8.24                    |                    | 4.88       | 1.000          |               | 1207m | South<br>West |
| GW110<br>781 | 10BL601<br>330,<br>10WA11<br>4320 | Spear        | Private       | Domestic                 | Domestic            |      | 17/02/2007       | 8.54                  | 8.54                    | Good               | 5.49       | 1.000          |               | 1218m | South<br>West |
| GW106<br>873 | 10BL164<br>550,<br>10WA11<br>3809 | Spear        | Private       | Domestic                 | Domestic            |      | 29/11/2004       | 7.63                  | 7.63                    | Good               | 4.58       | 1.000          |               | 1221m | South<br>West |
| GW111<br>308 | 10BL600<br>134,<br>10WA11<br>4108 | Spear        | Private       | Domestic                 | Domestic            |      | 19/03/2008       | 8.00                  | 8.00                    |                    |            |                |               | 1223m | South<br>West |
| GW114<br>839 | 10WA11<br>9177                    | Spear        | Private       | Domestic                 | Domestic            |      | 11/04/2015       | 5.00                  | 5.00                    |                    | 15.0<br>0  | 0.500          |               | 1226m | South<br>West |
| GW100<br>209 | 10BL152<br>038                    | Bore         | Private       | Domestic,<br>Stock       | Domestic,<br>Stock  |      | 16/04/1993       | 108.00                | 108.00                  | 8000               |            | 0.790          |               | 1226m | North         |
| GW111<br>482 | 10WA10<br>2323                    | Spear        | Private       | Domestic                 | Domestic            |      | 23/05/2011       | 7.63                  | 7.63                    | good               | 4.27       | 1.000          |               | 1242m | South<br>West |
| GW109<br>223 | 10BL164<br>465,<br>10WA11<br>3797 | Spear        | Private       | Domestic                 | Domestic            |      | 18/08/2008       | 6.00                  |                         |                    |            |                |               | 1249m | South<br>West |
| GW023<br>194 | 10BL016<br>604,<br>10WA10<br>8122 | Spear        | Private       | Domestic,<br>General Use | General<br>Use      |      | 01/11/1965       | 4.80                  | 4.90                    | Good               |            |                |               | 1262m | North<br>West |
| GW064<br>827 |                                   | Bore         | Private       |                          | Domestic            |      | 01/11/1991       | 7.80                  |                         |                    |            |                |               | 1286m | South<br>West |
| GW110<br>735 | 10BL600<br>691,<br>10WA11<br>4197 | Bore         | Private       | Domestic                 | Domestic            |      | 01/01/2006       | 8.00                  |                         |                    | 2.00       | 2.500          |               | 1286m | North<br>West |
| GW108<br>295 | 10BL600<br>614,<br>10WA11<br>4178 | Spear        | Private       | Domestic                 | Domestic            |      | 01/11/2006       | 8.00                  | 8.00                    |                    |            |                |               | 1286m | West          |
| GW105<br>517 | 10BL162<br>103,<br>10WA11<br>3348 | Bore         |               | Domestic                 | Domestic            |      | 03/11/2003       | 3.97                  | 3.97                    |                    | 1.22       | 1.000          |               | 1291m | South<br>West |
| GW107<br>269 | 10BL163<br>982,<br>10WA11<br>3713 | Spear        | Private       | Domestic                 | Domestic            |      | 16/12/2004       | 7.50                  | 7.50                    |                    | 2.00       | 0.500          |               | 1293m | South<br>West |
| GW111<br>790 | 10BL600<br>843,<br>10WA11<br>4236 | Spear        | Private       | Domestic                 | Domestic            |      | 01/01/2007       | 6.00                  | 6.00                    |                    |            |                |               | 1304m | North<br>West |
| GW108<br>439 | 10BL600<br>888,<br>10WA11<br>4237 | Spear        | Private       | Domestic                 | Domestic            |      | 05/01/2007       | 8.00                  | 8.00                    |                    |            |                |               | 1304m | West          |
| GW105<br>629 | 10BL162<br>294,<br>10WA11<br>3397 | Spear        | Private       | Domestic                 | Domestic            |      | 19/11/2003       | 7.93                  | 7.93                    |                    | 4.27       | 1.500          |               | 1314m | South<br>West |
| GW111<br>149 | 10BL601<br>733,<br>10WA11<br>4410 | Spear        | Private       | Domestic                 | Domestic            |      | 31/05/2007       | 7.00                  | 7.00                    |                    |            |                |               | 1324m | South<br>West |
| GW108<br>298 | 10BL600<br>632,<br>10WA11<br>4183 | Spear        | Private       | Domestic                 | Domestic            |      | 20/10/2006       | 6.00                  |                         |                    |            |                |               | 1325m | South<br>West |
| GW023<br>451 | 10BL017<br>145,<br>10WA11<br>2866 | Spear        | Private       | Domestic                 | General<br>Use      |      |                  | 2.80                  |                         |                    |            |                |               | 1345m | South<br>West |

| GW No.       | Licence<br>No  | Work<br>Type | Owner<br>Type | Authorised<br>Purpose            | Intended<br>Purpose | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist  | Dir           |
|--------------|--|--------------|---------------|----------------------------------|---------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|-------|---------------|
| GW108<br>993 | 10BL602<br>085,<br>10WA11<br>4439                    | Spear        | Private       | Domestic                         | Domestic            |      | 08/07/2008       | 7.93                  |                         | Good               | 3.96       | 1.000          |               | 1348m | South<br>West |
| GW107<br>207 | 10BL164<br>644,<br>10WA11<br>3826                    | Spear        | Private       | Domestic                         | Domestic            |      | 24/05/2005       | 4.00                  | 4.00                    |                    |            | 0.500          |               | 1349m | South<br>West |
| GW026<br>464 | 10BL019<br>292,<br>10WA11<br>2982                    | Spear        | Private       | Domestic                         | General<br>Use      |      |                  | 5.10                  |                         |                    |            |                |               | 1362m | South<br>West |
| GW023<br>423 | 10BL017<br>148,<br>10BL162<br>266,<br>10WA11<br>3384 | Spear        | Private       | Domestic,<br>Public/munici<br>pl | Domestic            |      | 01/02/1966       | 4.50                  | 4.60                    | Good               |            |                |               | 1367m | South<br>West |
| GW107<br>650 | 10BL165<br>687,<br>10WA11<br>4021                    | Spear        | Private       | Domestic                         | Domestic            |      | 15/11/2005       | 4.00                  | 4.00                    | Good               | 2.00       | 0.500          |               | 1376m | South<br>West |
| GW106<br>167 | 10BL163<br>780,<br>10WA11<br>3676                    | Spear        | Private       | Domestic                         | Domestic            |      | 28/05/2004       | 6.00                  | 6.00                    |                    |            |                |               | 1388m | South<br>West |
| GW108<br>623 | 10BL600<br>077,<br>10WA11<br>4093                    | Spear        | Private       | Domestic                         | Domestic            |      | 07/04/2006       | 6.00                  | 6.00                    | Good               | 2.00       | 0.500          |               | 1408m | South<br>West |
| GW107<br>744 | 10BL165<br>926,<br>10WA11<br>4059                    | Spear        | Private       | Domestic                         | Domestic            |      | 06/01/2006       | 4.00                  | 4.00                    | Good               | 2.00       | 0.500          |               | 1415m | South<br>West |
| GW110<br>274 | 10BL165<br>739,<br>10WA11<br>4036                    | Bore         | Private       | Domestic                         | Domestic            |      | 01/01/2006       | 3.00                  |                         |                    | 1.70       |                |               | 1418m | South<br>West |
| GW023<br>477 | 10BL017<br>654,<br>10WA11<br>2925                    | Spear        | Private       | Domestic                         | General<br>Use      |      | 01/02/1966       | 6.40                  | 6.40                    | Good               |            |                |               | 1422m | South<br>West |
| GW105<br>588 | 10BL162<br>243,<br>10WA11<br>3376                    | Spear        | Private       | Domestic                         | Domestic            |      | 01/11/2003       | 4.00                  | 4.00                    | Good               | 2.10       | 0.500          |               | 1426m | South<br>West |
| GW107<br>857 | 10BL600<br>084,<br>10WA11<br>4095                    | Spear        | Private       | Domestic                         | Domestic            |      | 10/03/2006       | 7.00                  | 7.00                    |                    | 5.00       | 0.500          |               | 1434m | South<br>West |
| GW108<br>006 | 10BL165<br>059,<br>10WA11<br>3910                    | Spear        | Private       | Domestic                         | Domestic            |      | 22/08/2005       | 3.96                  | 3.97                    |                    | 1.22       | 1.000          |               | 1446m | South<br>West |
| GW111<br>558 | 10BL600<br>777,<br>10WA11<br>4216                    | Spear        | Private       | Domestic                         | Domestic            |      | 31/01/2007       | 6.00                  | 6.00                    |                    |            |                |               | 1448m | South<br>West |
| GW106<br>975 | 10BL163<br>580,<br>10WA11<br>3617                    | Spear        | Private       | Domestic                         | Domestic            |      | 02/02/2005       | 4.00                  | 4.00                    | Good               | 2.00       | 0.500          |               | 1451m | South<br>West |
| GW107<br>540 | 10BL164<br>093,<br>10WA11<br>3727                    | Spear        | Private       | Domestic                         | Domestic            |      | 30/10/2005       | 7.00                  | 7.00                    |                    |            |                |               | 1452m | South<br>West |
| GW109<br>045 | 10BL601<br>662,<br>10WA11<br>4402                    | Spear        | Private       | Domestic                         | Domestic            |      | 15/07/2008       | 7.93                  |                         | Good               | 4.27       | 1.000          |               | 1456m | South<br>West |
| GW107<br>166 | 10BL165<br>186,<br>10WA11<br>3933                    | Spear        | Private       | Domestic                         | Domestic            |      | 14/06/2005       | 4.00                  | 4.00                    | Good               | 2.00       | 0.500          |               | 1457m | South<br>West |

| GW No.       | Licence<br>No  | Work<br>Type | Owner<br>Type | Authorised<br>Purpose           | Intended<br>Purpose             | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist  | Dir           |
|--------------|--|--------------|---------------|---------------------------------|---------------------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|-------|---------------|
| GW109<br>121 | 10BL602<br>117,<br>10WA11<br>4443                    | Spear        | Private       | Domestic                        | Domestic                        |      | 25/07/2008       | 5.80                  |                         | Good               | 1.52       | 1.000          |               | 1460m | South<br>West |
| GW110<br>272 | 10BL165<br>705,<br>10WA11<br>4026                    | Spear        | Private       | Domestic                        | Domestic                        |      | 30/10/2005       | 7.02                  | 7.02                    | Good               | 3.96       | 1.000          |               | 1462m | South<br>West |
| GW110<br>845 | 10BL601<br>174,<br>10WA11<br>4294                    | Spear        | Private       | Domestic                        | Domestic                        |      | 06/11/2006       | 8.54                  | 8.54                    | Good               | 5.49       | 1.000          |               | 1465m | South<br>West |
| GW100<br>025 | 10BL156<br>607,<br>10BL165<br>340,<br>10WA11<br>3963 | Spear        | Private       | Domestic,<br>Industrial         | Domestic                        |      | 01/08/1995       | 6.00                  | 6.00                    |                    |            |                |               | 1471m | South<br>West |
| GW024<br>062 | 10BL017<br>515,<br>10WA11<br>2909                    | Spear        | Private       | Domestic                        | General<br>Use                  |      |                  | 3.60                  | 3.70                    |                    |            |                |               | 1472m | West          |
| GW109<br>015 | 10BL600<br>717,<br>10WA10<br>9111                    | Spear        | Private       | Domestic                        | Domestic                        |      | 10/07/2008       | 6.10                  |                         | Good               | 4.97       | 0.500          |               | 1482m | West          |
| GW106<br>587 | 10BL163<br>532,<br>10WA11<br>3602                    | Spear        | Private       | Domestic                        | Domestic                        |      | 11/10/2004       | 4.00                  | 4.00                    | Good               | 2.00       | 0.500          |               | 1487m | South<br>West |
| GW101<br>638 | 10BL157<br>837,<br>10WA11<br>3182                    | Bore         |               | Domestic                        | Domestic                        |      | 19/12/1996       | 7.63                  | 7.63                    | Good               |            |                |               | 1487m | South<br>West |
| GW072<br>161 | 10BL153<br>838                                       | Bore         | Private       | Recreation<br>(groundwater<br>) | Recreation<br>(groundwate<br>r) |      | 24/02/1994       | 90.50                 | 90.50                   | 1600               | 14.0<br>0  | 7.700          |               | 1494m | North         |
| GW108<br>404 | 10BL600<br>697,<br>10WA11<br>4199                    | Spear        | Private       | Domestic                        | Domestic                        |      | 01/12/2006       | 7.63                  | 7.63                    | Good               | 1.52       | 1.000          |               | 1499m | South<br>West |
| GW110<br>868 | 10BL603<br>653,<br>10WA11<br>4594                    | Spear        | Private       | Domestic                        | Domestic                        |      | 14/04/2010       | 6.00                  | 6.00                    | Good               | 2.00       | 0.500          |               | 1502m | South<br>West |
| GW107<br>890 | 10BL165<br>994,<br>10WA11<br>4075                    | Spear        | Private       | Domestic                        | Domestic                        |      | 11/02/2006       | 5.00                  | 5.00                    |                    | 2.00       | 0.500          |               | 1503m | South<br>West |
| GW109<br>934 | 10BL602<br>846,<br>10WA11<br>4545                    | Bore         | Private       | Domestic                        | Domestic                        |      | 18/12/2008       | 6.00                  | 6.00                    | Good               | 3.00       | 0.500          |               | 1513m | South<br>West |
| GW103<br>950 | 10BL156<br>624                                       | Bore         |               | Test Bore                       | Test Bore                       |      | 19/04/1995       | 21.00                 | 21.00                   | 10800              |            |                |               | 1517m | East          |
| GW103<br>946 | 10BL156<br>624                                       | Bore         |               | Test Bore                       | Test Bore                       |      | 19/04/1995       | 17.00                 | 17.00                   | 1400               |            |                |               | 1517m | East          |
| GW103<br>949 | 10BL156<br>624                                       | Bore         |               | Test Bore                       | Test Bore                       |      | 19/04/1995       | 21.00                 | 21.00                   | 12900              |            |                |               | 1517m | East          |
| GW103<br>951 | 10BL156<br>624                                       | Bore         |               | Test Bore                       | Test Bore                       |      | 21/06/1995       | 149.00                | 149.00                  | 560                |            |                |               | 1517m | East          |
| GW103<br>944 | 10BL156<br>624                                       | Bore         |               | Test Bore                       | Test Bore                       |      | 19/04/1995       | 18.00                 | 18.00                   | 7600               |            |                |               | 1517m | East          |
| GW103<br>945 | 10BL156<br>624                                       | Bore         |               | Test Bore                       | Test Bore                       |      | 19/04/1995       | 21.00                 | 21.00                   | 7700               |            |                |               | 1517m | East          |
| GW103<br>941 | 10BL156<br>624                                       | Bore         |               | Test Bore                       | Test Bore                       |      | 18/04/1995       | 21.00                 | 21.00                   | 200                |            |                |               | 1517m | East          |
| GW103<br>948 | 10BL156<br>624                                       | Bore         |               | Test Bore                       | Test Bore                       |      | 19/04/1995       | 18.00                 | 18.00                   | 8300               |            |                |               | 1517m | East          |
| GW027<br>664 | 10BL020<br>771                                       | Bore         | Private       | Recreation<br>(groundwater<br>) | Irrigation                      |      | 01/06/1966       | 6.00                  | 6.10                    |                    |            |                |               | 1517m | North<br>West |

| GW No.       | Licence<br>No                     | Work<br>Type | Owner<br>Type | Authorised<br>Purpose | Intended<br>Purpose | Name             | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist  | Dir           |
|--------------|-----------------------------------|--------------|---------------|-----------------------|---------------------|------------------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|-------|---------------|
| GW103<br>942 | 10BL156<br>624                    | Bore         |               | Test Bore             | Test Bore           |                  | 19/04/1995       | 12.00                 | 12.00                   | 5300               |            |                |               | 1517m | East          |
| GW103<br>943 | 10BL156<br>624                    | Bore         |               | Test Bore             | Test Bore           |                  | 18/04/1995       | 14.00                 | 14.00                   | 8000               |            |                |               | 1517m | East          |
| GW103<br>947 | 10BL156<br>624                    | Bore         |               | Test Bore             | Test Bore           |                  | 19/05/1995       | 18.00                 | 18.00                   | 9500               |            |                |               | 1517m | East          |
| GW109<br>645 | 10BL602<br>446,<br>10WA11<br>4513 | Spear        | Private       | Domestic              | Domestic            |                  | 12/05/2008       | 8.54                  | 8.54                    | Good               | 5.18       | 1.000          |               | 1524m | South<br>West |
| GW023<br>304 | 10BL016<br>695,<br>10WA11<br>2837 | Spear        | Private       | Domestic              | General<br>Use      |                  | 01/11/1965       | 4.20                  | 4.30                    | Good               |            |                |               | 1531m | South<br>West |
| GW016<br>108 | 10BL008<br>343,<br>10WA11<br>2792 | Spear        | Private       | Domestic              | General<br>Use      |                  |                  | 7.60                  | 7.60                    |                    |            |                |               | 1531m | South<br>West |
| GW109<br>963 | 10BL601<br>004,<br>10WA11<br>4261 | Spear        | Private       | Domestic              | Domestic            |                  | 28/11/2006       | 8.00                  | 8.00                    |                    |            |                |               | 1548m | North<br>West |
| GW108<br>406 | 10BL600<br>707,<br>10WA11<br>4202 | Spear        | Private       | Domestic              | Domestic            |                  | 28/11/2006       | 8.00                  | 8.00                    |                    |            |                |               | 1562m | North<br>West |
| GW109<br>964 | 10BL601<br>003,<br>10WA11<br>4260 | Spear        | Private       | Domestic              | Domestic            |                  | 28/11/2006       | 8.00                  | 8.00                    |                    |            |                |               | 1569m | North<br>West |
| GW108<br>588 | 10BL601<br>050,<br>10WA11<br>4273 | Spear        | Private       | Domestic              | Domestic            |                  | 03/02/2007       | 8.00                  | 8.00                    |                    |            |                |               | 1571m | North<br>West |
| GW023<br>583 | 10BL017<br>517,<br>10WA11<br>2911 | Spear        | Private       | Domestic              | General<br>Use      |                  |                  | 8.20                  | 8.20                    | Potable            |            |                |               | 1571m | South<br>West |
| GW106<br>206 | 10BL163<br>318,<br>10WA11<br>3559 | Spear        | Private       | Domestic              | Domestic            |                  | 11/08/2004       | 5.18                  | 5.19                    |                    | 2.13       | 1.000          |               | 1571m | South<br>West |
| GW109<br>965 | 10BL601<br>646,<br>10WA11<br>4397 | Bore         | Private       | Domestic              | Domestic            |                  | 28/11/2006       | 8.00                  | 8.00                    |                    |            |                |               | 1582m | North<br>West |
| GW108<br>495 | 10BL600<br>787,<br>10WA11<br>4220 | Spear        | Private       | Domestic              | Domestic            |                  | 15/02/2007       | 9.46                  | 9.46                    | Good               | 5.49       | 1.000          |               | 1602m | South<br>West |
| GW101<br>328 | 10BL158<br>406,<br>10WA11<br>3228 | Spear        | Private       | Domestic              | Domestic            |                  | 02/02/1998       | 7.62                  | 7.62                    | Good               | 5.18       | 1.000          |               | 1603m | South<br>West |
| GW107<br>531 | 10BL163<br>207,<br>10WA11<br>4719 | Bore         |               | Industrial            | Industrial          |                  | 19/10/2005       | 14.00                 | 14.00                   | Good               | 2.00       | 2.000          |               | 1620m | South<br>West |
| GW107<br>236 | 10BL165<br>210,<br>10WA11<br>3936 | Bore         |               | Domestic              | Domestic            |                  | 13/08/1995       | 8.00                  |                         |                    | 5.00       | 60.00<br>0     |               | 1628m | South<br>West |
| GW109<br>966 | 10BL601<br>239,<br>10WA11<br>4306 | Spear        | Private       | Domestic              | Domestic            |                  | 17/03/2009       | 3.00                  | 3.00                    |                    |            |                |               | 1635m | North<br>West |
| GW107<br>148 | 10BL164<br>995,<br>10WA11<br>3902 | Spear        | Private       | Domestic              | Domestic            |                  | 25/05/2005       | 5.80                  | 5.80                    |                    | 1.52       | 1.000          |               | 1646m | South<br>West |
| GW114<br>745 | 10BL605<br>632                    | Bore         | Private       | Monitoring<br>Bore    | Monitoring<br>Bore  | BRANO<br>PTY LTD | 17/10/2014       | 13.95                 | 13.95                   |                    |            |                |               | 1648m | North<br>West |
| GW114<br>744 | 10BL605<br>632                    | Bore         | Private       | Monitoring<br>Bore    | Monitoring<br>Bore  | BRANO<br>PTY LTD | 17/10/2014       | 17.00                 | 17.00                   |                    |            |                |               | 1653m | North<br>West |

| GW No.       | Licence<br>No                     | Work<br>Type | Owner<br>Type | Authorised<br>Purpose                 | Intended<br>Purpose     | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist  | Dir           |
|--------------|-----------------------------------|--------------|---------------|---------------------------------------|-------------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|-------|---------------|
| GW107<br>344 | 10BL165<br>389,<br>10WA11<br>3970 | Spear        | Private       | Domestic                              | Domestic                |      | 08/08/2005       | 4.00                  | 4.00                    | Good               | 2.00       | 0.500          |               | 1661m | South<br>West |
| GW105<br>153 | 10BL157<br>074,<br>10WA11<br>3109 | Bore         | Private       | Domestic                              | Domestic                |      | 13/09/1995       | 5.49                  | 5.49                    | Good               | 5.49       | 1.000          |               | 1662m | South<br>West |
| GW105<br>880 | 10BL162<br>677,<br>10WA11<br>3471 | Bore         |               | Domestic                              |                         |      | 09/05/2005       |                       |                         |                    |            |                |               | 1663m | South         |
| GW024<br>109 | 10BL017<br>755,<br>10WA11<br>2930 | Spear        | Private       | Domestic                              | General<br>Use          |      | 01/03/1966       | 2.10                  | 2.10                    |                    |            |                |               | 1672m | North<br>West |
| GW023<br>310 | 10BL016<br>882,<br>10WA11<br>2850 | Bore         | Private       | Domestic                              | General<br>Use          |      | 01/01/1966       | 3.60                  | 3.70                    |                    |            |                |               | 1677m | South<br>West |
| GW101<br>137 | 10BL158<br>207,<br>10WA11<br>3204 | Spear        | Private       | Domestic                              | Domestic                |      | 02/01/1998       | 6.70                  | 6.71                    | Good               | 3.96       | 0.750          |               | 1681m | South<br>West |
| GW106<br>889 | 10BL164<br>401,<br>10WA11<br>3788 | Spear        | Private       | Domestic                              | Domestic                |      | 29/12/2005       | 7.93                  | 7.93                    | Good               | 1.88       | 1.000          |               | 1685m | South<br>West |
| GW108<br>590 | 10BL601<br>169,<br>10WA10<br>9155 | Spear        | Private       | Domestic                              | Domestic                |      | 13/03/2007       | 3.96                  | 3.97                    | Good               | 2.13       | 5.000          |               | 1692m | South<br>West |
| GW105<br>158 | 10BL162<br>173,<br>10BL163<br>150 | Bore         | Private       | Domestic,<br>Industrial,<br>Test Bore | Domestic,<br>Industrial |      | 21/10/2003       | 4.58                  | 4.58                    |                    | 1.83       | 1.000          |               | 1697m | South<br>West |
| GW109<br>419 | 10BL602<br>238,<br>10WA11<br>4469 | Spear        | Private       | Domestic                              | Domestic                |      | 14/10/2008       | 7.93                  |                         | Good               | 4.27       | 1.000          |               | 1708m | South<br>West |
| GW013<br>657 | 10BL009<br>135,<br>10WA11<br>2801 | Spear        | Private       | Domestic                              | General<br>Use          |      |                  | 7.60                  | 7.60                    |                    |            |                |               | 1718m | South<br>West |
| GW107<br>552 | 10BL164<br>240,<br>10WA11<br>3762 | Spear        | Private       | Domestic                              | Domestic                |      | 27/10/2004       | 9.15                  | 9.15                    | Good               | 5.80       | 1.000          |               | 1721m | South<br>West |
| GW106<br>360 | 10BL164<br>059,<br>10WA11<br>3721 | Bore         |               | Domestic                              |                         |      | 22/08/2005       |                       |                         |                    |            |                |               | 1729m | South<br>West |
| GW111<br>782 | 10BL600<br>979,<br>10WA11<br>4255 | Spear        | Private       | Domestic                              | Domestic                |      | 01/01/2006       | 8.00                  | 8.00                    |                    | 2.50       | 1.000          |               | 1742m | South<br>West |
| GW111<br>769 | 10BL165<br>079,<br>10WA11<br>3919 | Spear        | Private       | Domestic                              | Domestic                |      | 01/08/2005       | 7.60                  | 7.60                    | good               | 4.58       | 1.000          |               | 1745m | South<br>West |
| GW107<br>349 | 10BL165<br>064,<br>10WA11<br>3913 | Spear        | Private       | Domestic                              | Domestic                |      | 02/09/2005       | 7.32                  | 7.32                    | Good               | 3.96       | 1.000          |               | 1748m | South<br>West |
| GW108<br>300 | 10BL600<br>645,<br>10WA11<br>4188 | Spear        | Private       | Domestic                              | Domestic                |      | 30/10/2006       | 7.32                  | 7.32                    |                    | 3.96       | 1.000          |               | 1754m | South<br>West |
| GW106<br>986 | 10BL163<br>124,<br>10WA11<br>3528 | Spear        | Private       | Domestic                              | Domestic                |      | 04/06/2004       | 7.01                  | 7.02                    | Good               | 3.96       | 1.000          |               | 1768m | South<br>West |
| GW109<br>666 | 10BL602<br>665,<br>10WA11<br>4530 | Spear        | Private       | Domestic                              | Domestic                |      | 09/09/2008       | 10.68                 | 10.68                   | Good               | 6.10       | 1.000          |               | 1783m | South         |

| GW No.       | Licence<br>No  | Work<br>Type  | Owner<br>Type | Authorised<br>Purpose                        | Intended<br>Purpose | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist  | Dir           |
|--------------|--|---------------|---------------|--|---------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|-------|---------------|
| GW111<br>590 | 10BL600<br>750,<br>10WA11<br>4212                    | Spear         | Private       | Domestic                                     | Domestic            |      | 01/01/2006       | 7.00                  | 7.00                    |                    |            |                |               | 1786m | South<br>West |
| GW106<br>128 | 10BL162<br>245,<br>10WA11<br>3377                    | Spear         | Private       | Domestic                                     | Domestic            |      | 22/03/2004       | 7.00                  | 7.00                    | Good               | 5.00       | 0.500          |               | 1790m | South<br>West |
| GW105<br>975 | 10BL163<br>247,<br>10WA11<br>3543                    | Spear         | Private       | Domestic                                     | Domestic            |      | 08/06/2004       | 8.23                  | 8.24                    |                    | 5.18       | 1.000          |               | 1794m | South<br>West |
| GW112<br>342 | 10BL165<br>795,<br>10WA11<br>4043                    | Spear         | Private       | Domestic                                     | Domestic            |      | 29/11/2005       | 9.15                  | 9.15                    |                    | 5.19       | 1.000          |               | 1796m | South<br>West |
| GW100<br>473 | 10BL157<br>884,<br>10WA11<br>3184                    | Spear         | Private       | Domestic                                     | Domestic            |      | 25/03/1997       | 6.71                  | 6.71                    | Good               |            | 1.000          |               | 1797m | South<br>West |
| GW107<br>662 | 10BL165<br>792,<br>10WA11<br>4041                    | Spear         | Private       | Domestic                                     | Domestic            |      | 08/12/2005       | 6.00                  | 6.00                    | Good               | 4.00       | 0.500          |               | 1813m | South<br>West |
| GW111<br>713 | 10BL603<br>088,<br>10WA11<br>4568                    | Spear         | Private       | Domestic                                     | Domestic            |      | 28/05/2009       | 7.93                  | 7.93                    | good               | 4.27       | 1.000          |               | 1816m | South<br>West |
| GW108<br>584 | 10BL600<br>833,<br>10WA11<br>4233                    | Spear         | Private       | Domestic                                     | Domestic            |      | 23/01/2007       | 5.80                  | 5.80                    | Good               | 2.44       | 1.000          |               | 1830m | South<br>West |
| GW106<br>851 | 10BL164<br>416,<br>10WA11<br>3790                    | Spear         | Private       | Domestic                                     | Domestic            |      | 01/12/2004       | 3.50                  | 3.50                    |                    |            |                |               | 1831m | South         |
| GW111<br>227 | 10BL604<br>151,<br>10WA11<br>4604                    | Spear         | Private       | Domestic                                     | Domestic            |      | 30/08/2010       | 8.54                  | 8.54                    | good               | 4.80       | 1.000          |               | 1831m | South<br>West |
| GW027<br>569 | 10BL021<br>053,<br>10BL603<br>143,<br>10WA11<br>4571 | Spear         | School        | Domestic,<br>Recreation<br>(groundwater<br>) | Domestic            |      | 08/12/2006       | 8.24                  | 8.24                    | Good               | 3.60       | 1.000          |               | 1837m | South<br>West |
| GW102<br>226 | 10BL159<br>118,<br>10WA11<br>3277                    | Spear         | Private       | Domestic                                     | Domestic            |      | 27/03/1999       | 7.63                  | 7.63                    | Good               | 4.88       | 1.000          |               | 1839m | South<br>West |
| GW025<br>565 | 10BL016<br>297,<br>10WA11<br>2805                    | (Unkn<br>own) | Private       | Domestic                                     | General<br>Use      |      | 01/11/1965       | 5.40                  | 5.50                    |                    |            |                |               | 1843m | South<br>West |
| GW110<br>908 | 10BL603<br>567                                       | Well          | Private       | Monitoring<br>Bore                           | Monitoring<br>Bore  |      | 19/01/2010       | 6.00                  | 6.00                    |                    | 4.00       |                |               | 1848m | East          |
| GW111<br>666 | 10WA11<br>7351                                       | Spear         | Private       | Domestic                                     | Domestic            |      | 16/01/2012       | 7.63                  | 7.63                    | good               | 4.58       | 1.000          |               | 1850m | South<br>West |
| GW106<br>474 | 10BL164<br>120,<br>10WA11<br>3730                    | Spear         | Private       | Domestic                                     | Domestic            |      | 18/10/2004       | 7.63                  | 7.63                    | Good               | 4.57       | 1.000          |               | 1851m | South<br>West |
| GW107<br>105 | 10BL163<br>404,<br>10WA11<br>3576                    | Spear         | Private       | Domestic                                     | Domestic            |      | 21/06/2004       | 7.26                  | 7.26                    | Good               | 3.96       | 1.000          |               | 1871m | South<br>West |
| GW107<br>973 | 10BL600<br>198,<br>10WA11<br>4123                    | Spear         | Private       | Domestic                                     | Domestic            |      | 20/04/2007       | 7.00                  | 7.00                    |                    |            |                |               | 1880m | South<br>West |
| GW107<br>542 | 10BL165<br>724,<br>10WA11<br>4032                    | Spear         | Private       | Domestic                                     | Domestic            |      | 11/11/2005       | 7.32                  | 7.32                    | Good               | 4.37       | 1.000          |               | 1888m | South<br>West |

| GW No.       | Licence<br>No                     | Work<br>Type  | Owner<br>Type | Authorised<br>Purpose           | Intended<br>Purpose | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist  | Dir           |
|--------------|-----------------------------------|---------------|---------------|---------------------------------|---------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|-------|---------------|
| GW023<br>837 | 10BL017<br>311,<br>10WA11<br>2887 | Spear         | Private       | Domestic                        | General<br>Use      |      | 01/01/1966       | 5.10                  | 5.20                    | Good               |            |                |               | 1889m | South<br>West |
| GW110<br>907 | 10BL603<br>567                    | Well          | Private       | Monitoring<br>Bore              | Monitoring<br>Bore  |      | 19/01/2010       | 5.80                  | 5.80                    |                    | 3.80       |                |               | 1889m | East          |
| GW110<br>906 | 10BL603<br>567                    | Well          | Private       | Monitoring<br>Bore              | Monitoring<br>Bore  |      | 19/01/2010       | 5.80                  | 5.80                    |                    | 3.50       |                |               | 1899m | East          |
| GW108<br>937 | 10BL601<br>875,<br>10WA11<br>4419 | Spear         | Private       | Domestic                        | Domestic            |      | 19/06/2008       | 7.32                  |                         | Good               | 3.96       | 1.000          |               | 1900m | South<br>West |
| GW108<br>796 | 10BL601<br>758,<br>10WA11<br>4412 | Spear         | Private       | Domestic                        | Domestic            |      | 04/06/2007       | 7.63                  | 7.63                    | Good               | 4.27       | 1.000          |               | 1903m | South<br>West |
| GW113<br>045 | 10BL602<br>385,<br>10WA11<br>4502 | Spear         | Private       | Domestic                        | Domestic            |      | 01/01/2008       | 8.00                  | 8.00                    | Salty              | 7.00       | 0.500          |               | 1913m | South<br>West |
| GW110<br>898 | 10BL603<br>948,<br>10WA11<br>4600 | Spear         | Private       | Domestic                        | Domestic            |      | 22/05/2010       | 8.45                  | 8.45                    | good               | 5.49       | 1.000          |               | 1918m | South<br>West |
| GW109<br>268 | 10BL164<br>861,<br>10WA11<br>3875 | Spear         | Private       | Domestic                        | Domestic            |      | 26/08/2008       | 6.50                  |                         |                    |            |                |               | 1921m | South<br>West |
| GW111<br>037 | 10BL601<br>593,<br>10WA11<br>4383 | Spear         | Private       | Domestic                        | Domestic            |      | 30/05/2009       | 6.00                  | 6.00                    |                    |            |                |               | 1928m | South<br>West |
| GW106<br>946 | 10BL164<br>802,<br>10WA11<br>3862 | Spear         | Private       | Domestic                        | Domestic            |      | 06/04/2005       | 6.00                  | 6.00                    |                    |            |                |               | 1928m | South<br>West |
| GW111<br>172 | 10BL165<br>178,<br>10WA11<br>3931 | Bore          | Private       | Domestic                        | Domestic            |      | 01/01/2005       | 10.00                 | 10.00                   |                    |            |                |               | 1930m | South<br>West |
| GW110<br>097 | 10BL163<br>711,<br>10WA11<br>3658 | Spear         | Private       | Domestic                        | Domestic            |      | 18/09/2004       | 6.71                  | 6.71                    | Good               | 3.05       | 1.000          |               | 1937m | South<br>West |
| GW111<br>443 | 10BL600<br>798,<br>10WA11<br>4225 | Spear         | Private       | Domestic                        | Domestic            |      | 12/02/2007       | 9.15                  | 9.15                    | good               | 9.15       | 1.000          |               | 1938m | South<br>West |
| GW108<br>982 | 10BL602<br>092,<br>10WA11<br>4440 | Spear         | Private       | Domestic                        | Domestic            |      | 30/06/2008       | 6.00                  |                         | Good               | 4.00       | 0.500          |               | 1946m | South<br>West |
| GW107<br>883 | 10BL165<br>979,<br>10WA11<br>4073 | Spear         | Private       | Domestic                        | Domestic            |      | 06/02/2006       | 7.00                  | 7.00                    |                    | 4.00       | 0.500          |               | 1952m | South<br>West |
| GW023<br>257 | 10BL016<br>739                    | Spear         | Private       | Irrigation                      | Irrigation          |      | 01/11/1965       | 5.40                  | 5.50                    | Good               |            |                |               | 1955m | South<br>West |
| GW106<br>563 | 10BL164<br>243,<br>10WA11<br>3763 | Spear         | Private       | Domestic                        | Domestic            |      | 15/11/2004       | 6.71                  | 6.71                    |                    | 3.66       | 1.000          |               | 1968m | South<br>West |
| GW107<br>026 | 10BL163<br>215,<br>10WA11<br>3540 | Spear         | Private       | Domestic                        | Domestic            |      | 01/03/2005       | 9.76                  | 9.76                    | Good               | 6.10       | 1.000          |               | 1976m | South         |
| GW027<br>570 | 10BL021<br>054,<br>10WA11<br>4767 | (Unkn<br>own) | Private       | Recreation<br>(groundwater<br>) | Irrigation          |      | 01/07/1967       | 15.20                 | 15.20                   |                    |            |                |               | 1980m | South<br>West |
| GW110<br>911 | 10BL603<br>566                    | Well          | Private       | Monitoring<br>Bore              | Monitoring<br>Bore  |      | 19/01/2010       | 6.00                  | 6.00                    |                    | 3.20       |                |               | 1982m | East          |

| GW No.       | Licence<br>No                     | Work<br>Type | Owner<br>Type | Authorised<br>Purpose | Intended<br>Purpose | Name | Complete<br>Date | Final<br>Depth<br>(m) | Drilled<br>Depth<br>(m) | Salinity<br>(mg/L) | SWL<br>(m) | Yield<br>(L/s) | Elev<br>(AHD) | Dist  | Dir           |
|--------------|-----------------------------------|--------------|---------------|-----------------------|---------------------|------|------------------|-----------------------|-------------------------|--------------------|------------|----------------|---------------|-------|---------------|
| GW109<br>314 | 10BL602<br>492,<br>10WA11<br>4519 | Spear        | Private       | Domestic              | Domestic            |      | 09/09/2008       | 9.15                  |                         | Good               | 5.80       | 1.000          |               | 1983m | South<br>West |

Borehole Data Source : NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation for all bores prefixed with GW. All other bores © Commonwealth of Australia (Bureau of Meteorology) 2015. Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

# Hydrogeology & Groundwater

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

# **Driller's Logs**

Drill log data relevant to the boreholes within the dataset buffer:

| Groundwater No | Drillers Log   | Distance | Direction     |
|----------------|--|----------|---------------|
| GW023455       | 0.00m-0.91m Sand<br>0.91m-4.87m Sand White Water Supply                                    | 0m       | Onsite        |
| GW109028       | 0.00m-0.30m TOPSOIL<br>0.30m-6.50m YELLOW SAND<br>6.50m-8.00m GREY SAND                    | Om       | Onsite        |
| GW101797       | 0.00m-5.79m UNCONSOLIDATED SAND  | 41m      | East          |
| GW107210       | 0.00m-0.30m topsoil<br>0.30m-4.50m sand, yellow<br>4.50m-6.00m sand, white and shells      | 42m      | West          |
| GW105991       | 0.00m-0.30m topsoil<br>0.30m-3.20m sand, yellow<br>3.20m-6.00m sand, grey with some shells | 48m      | North         |
| GW108702       | 0.00m-0.30m topsoil<br>0.30m-3.30m sand, yellow<br>3.30m-6.00m sand, grey and shells       | 62m      | North<br>West |
| GW111939       | 0.00m-6.00m SAND   | 64m      | North<br>West |
| GW102799       | 0.00m-7.63m UNCONSOLIDATED ALL SANDS   | 65m      | West          |
| GW101163       | 0.00m-5.79m UNCONSOLIDATED. ALL CLEAN SAND WITH SMALL SEA SHELLS.                          | 66m      | East          |
| GW109654       | 0.00m-8.23m UNCONSOLIDATED ALL SANDS   | 69m      | West          |
| GW102218       | 0.00m-6.71m Unconsolidated Sands, some sea shells  | 71m      | North<br>West |
| GW102693       | 0.00m-7.63m SANDS UNCONSOLIDATED   | 71m      | North<br>West |
| GW101022       | 0.00m-6.10m UNCONSOLIDATED ALL SANDS   | 72m      | East          |
| GW107052       | 0.00m-5.79m Sand, unconsolidated   | 73m      | North East    |
| GW108571       | 0.00m-8.85m Sand, unconsolidated   | 74m      | South         |
| GW108239       | 0.00m-7.63m sand, decomposed   | 85m      | South<br>West |
| GW100685       | 0.00m-6.10m SAND   | 90m      | North East    |
| GW105774       | 0.00m-7.32m sand, unconsolidated with small sea shells                                     | 95m      | West          |
| GW108582       | 0.00m-8.54m Sand, unconsolidated   | 98m      | South<br>West |
| GW024202       | 0.00m-0.91m Sand Grey<br>0.91m-6.70m Sand White Water Supply                               | 100m     | South<br>West |
| GW108179       | 0.00m-9.76m sand   | 101m     | South         |
| GW105674       | 0.00m-7.02m sand, unconsolidated with shell  | 107m     | West          |
| GW106557       | 0.00m-6.10m sand, unconsolidated   | 110m     | North East    |
| GW106014       | 0.00m-7.32m sand, with small sea shells  | 129m     | North<br>West |

| Groundwater No | Drillers Log   | Distance | Direction     |
|----------------|--|----------|---------------|
| GW106940       | 0.00m-0.30m Topsoil<br>0.30m-3.50m Sand, brown<br>3.50m-6.00m Sand, grey   | 133m     | North East    |
| GW024203       | 0.00m-2.13m Sand Grey<br>2.13m-5.48m Sand Light Grey Water Supply  | 151m     | West          |
| GW108795       | 0.00m-6.10m sand   | 170m     | North East    |
| GW110670       | 0.00m-5.79m UNCONSOLIDATED ALL SANDS   | 170m     | North East    |
| GW106799       | 0.00m-6.00m sand   | 176m     | West          |
| GW106712       | 0.00m-0.30m topsoil<br>0.30m-4.00m sand, yellow<br>4.00m-7.00m sand, grey with shells  | 183m     | West          |
| GW023208       | 0.00m-3.04m Sand Black<br>3.04m-5.48m Mud Black Water Supply   | 196m     | West          |
| GW072785       | 0.00m-7.60m Unconsolidated Sand With Small Sea Shells  | 203m     | South<br>West |
| GW104867       | 0.00m-8.85m UNCONSOLIDATED ALL SAND  | 203m     | South<br>West |
| GW111540       | 0.00m-8.54m UNCONSOLIDATED ALL SAND  | 208m     | East          |
| GW106271       | 0.00m-6.10m sand   | 215m     | West          |
| GW023276       | 0.00m-0.30m Made Ground<br>0.30m-4.57m Sand Dirty<br>4.57m-6.09m Wood Decomposed Sand<br>6.09m-7.62m Sand Dirty<br>7.62m-8.83m Mud Marine Fossils:shell Fragments Water Supply | 224m     | North<br>West |
| GW023524       | 0.00m-6.09m Sand Water Supply  | 225m     | West          |
| GW110133       | 0.00m-8.54m UNCONSOLIDATED ALL SANDS   | 243m     | East          |
| GW107977       | 0.00m-5.79m SAND   | 246m     | West          |
| GW024379       | 0.00m-8.22m Sand White Water Supply  | 268m     | South<br>East |
| GW013505       | 0.00m-9.14m Sand Water Supply  | 276m     | South         |
| GW072283       | 0.00m-7.32m Unconsolidated Sand  | 289m     | West          |
| GW023684       | 0.00m-7.92m Sand White Water Supply  | 297m     | South         |
| GW100740       | 0.00m-8.23m UNCONSOLIDATED WITH SMALL SEA SHELLS   | 301m     | South<br>West |
| GW110098       | 0.00m-8.23m UNCONSOLIDATED ALL SANDS   | 317m     | South<br>West |
| GW103152       | 0.00m-8.23m UNCONSOLIDATED ALL SANDS   | 320m     | South<br>West |
| GW111121       | 0.00m-10.68m UNCONSOLIDATED ALL SANDS  | 326m     | South         |
| GW105565       | 0.00m-7.63m UNCONSOLIDATED ALL SANDS   | 332m     | West          |
| GW111139       | 0.00m-10.98m UNCONSOLIDATED ALL SANDS  | 339m     | South         |
| GW106720       | 0.00m-6.00m sand   | 362m     | South<br>West |
| GW107605       | 0.00m-8.54m Sand, unconsolidated   | 370m     | South<br>West |
| GW110441       | 0.00m-8.54m UNCONSOLIDATED ALL SANDS   | 377m     | South<br>West |
| GW109932       | 0.00m-7.32m UNCONSOLIDATED ALL SANDS   | 401m     | South<br>West |
| GW108744       | 0.00m-9.15m sand   | 433m     | South<br>West |
| GW108713       | 0.00m-9.15m sand   | 447m     | South<br>West |

| Groundwater No | Drillers Log  | Distance | Direction     |
|----------------|---|----------|---------------|
| GW108547       | 0.00m-7.01m Sand, unconsolidated  | 449m     | South<br>West |
| GW107516       | 0.00m-8.00m sand  | 461m     | South<br>West |
| GW023291       | 0.00m-3.35m Sand<br>3.35m-5.18m Sand Pete Water Supply<br>5.18m-7.62m Sand Water Supply | 462m     | South<br>West |
| GW024064       | 0.00m-9.14m Sand White Water Supply   | 473m     | South         |
| GW110445       | 0.00m-6.00m ALL SAND  | 477m     | South<br>West |
| GW108721       | 0.00m-8.54m sand  | 486m     | South<br>West |
| GW107356       | 0.00m-0.30m topsoil<br>0.30m-4.50m sand, yellow<br>4.50m-6.00m sand, grey               | 488m     | South<br>West |
| GW105768       | 0.00m-7.01m sand, unconsulidated  | 492m     | South<br>West |
| GW106659       | 0.00m-7.63m sand, unconsolidated  | 498m     | South<br>West |
| GW107333       | 0.00m-10.37m Sand, unconsolidated   | 511m     | South         |
| GW109926       | 0.00m-0.30m TOPSOIL<br>0.30m-6.00m YELLOW SAND<br>6.00m-9.00m GREY SAND AND SHELLS      | 542m     | South<br>West |
| GW111311       | 0.00m-9.15m UNCONSOLIDATED ALL SAND   | 544m     | South<br>West |
| GW072405       | 0.00m-0.30m GARDEN LOAM<br>0.30m-8.00m SAND   | 546m     | South         |
| GW110554       | 0.00m-0.30m TOPSOIL<br>0.30m-6.30m SAND YELLOW<br>6.30m-9.00m SAND, GREY,SMALL SHALES   | 550m     | South         |
| GW106631       | 0.00m-8.85m sand, unconsolidated  | 551m     | South<br>West |
| GW107507       | 0.00m-0.30m topsoil<br>0.30m-6.30m sand, yellow<br>6.30m-9.00m sand, white              | 573m     | South         |
| GW107626       | 0.00m-0.30m topsoil<br>0.30m-6.30m sand, yellow<br>6.30m-9.00m sand, white              | 586m     | South         |
| GW105995       | 0.00m-1.52m clay, land fill<br>1.53m-4.58m sand, unconsolidated                         | 597m     | West          |
| GW108539       | 0.00m-0.30m Topsoil<br>0.30m-4.50m Sand, yellow<br>4.50m-7.00m Sand, grey               | 600m     | South<br>West |
| GW024585       | 0.00m-0.91m Sand Grey<br>0.91m-7.01m Sand White Water Supply                            | 603m     | South<br>West |
| GW106067       | 0.00m-10.06m sand, unconsolidated   | 604m     | South         |
| GW110844       | 0.00m-5.49m UNCONSOLIDATED ALL SAND   | 613m     | South<br>West |
| GW107346       | 0.00m-9.76m Sand, unconsolidated  | 624m     | South<br>West |
| GW106425       | 0.00m-7.00m sand  | 625m     | South<br>West |
| GW108252       | 0.00m-9.15m sand, unconsolidated  | 638m     | South<br>West |
| GW108171       | 0.00m-9.00m sand  | 655m     | South         |
| GW100965       | 0.00m-8.23m UNCONSOLIDATED ALL SANDS  | 656m     | South<br>West |
| GW110917       | 0.00m-8.54m UNCONSOLIDATED ALL SAND.  | 661m     | South<br>West |
| GW107302       | 0.00m-6.00m sand  | 667m     | South<br>West |

| Groundwater No | Drillers Log   | Distance | Direction     |
|----------------|--|----------|---------------|
| GW107318       | 0.00m-7.63m Sand, unconsolidated   | 669m     | South<br>West |
| GW101032       | 0.00m-7.32m UNCONSOLIDATED. ALL SAND WITH SMALL SEA SHELLS.                | 671m     | South<br>West |
| GW107306       | 0.00m-6.00m sand   | 679m     | South<br>West |
| GW111224       | 0.00m-0.30m TOPSOIL<br>0.30m-4.30m YELLOW SAND<br>4.30m-6.00m GREY SAND    | 679m     | West          |
| GW105725       | 0.00m-8.85m sand, unconsolidated with small sea shells                     | 681m     | South<br>West |
| GW106274       | 0.00m-8.23m sand   | 694m     | South<br>West |
| GW108434       | 0.00m-8.54m Sand, unconsolidated   | 697m     | South<br>West |
| GW107121       | 0.00m-5.00m Sand   | 698m     | South<br>West |
| GW107541       | 0.00m-6.00m sand   | 715m     | South<br>West |
| GW110897       | 0.00m-8.54m UNCONSOLIDATE ALL SAND   | 719m     | South<br>West |
| GW106982       | 0.00m-5.00m ALL SAND   | 722m     | West          |
| GW108599       | 0.00m-12.00m sand  | 744m     | South<br>West |
| GW101765       | 0.00m-8.00m Sand   | 747m     | South<br>West |
| GW108096       | 0.00m-7.32m sand   | 747m     | South<br>West |
| GW107972       | 0.00m-7.00m sand   | 756m     | South<br>West |
| GW104901       | 0.00m-7.63m UNCONSOLIDATED ALL SANDS                                       | 758m     | South         |
| GW108578       | 0.00m-6.00m Sand   | 761m     | South<br>West |
| GW100444       | 0.00m-5.49m UNCONSOLIDATED, ALL SAND                                       | 772m     | West          |
| GW107511       | 0.00m-8.23m Sand, unconsolidated   | 780m     | South<br>West |
| GW105550       | 0.00m-8.85m UNCONSOLIDATED ALL SANDS/SHELLS                                | 781m     | South<br>West |
| GW108454       | 0.00m-9.46m Sand, unconsolidated   | 788m     | South<br>West |
| GW017475       | 0.00m-7.62m Sand Water Supply  | 798m     | South<br>West |
| GW108717       | 0.00m-5.18m sand   | 798m     | West          |
| GW108625       | 0.00m-9.46m sand   | 803m     | South<br>West |
| GW107442       | 0.00m-9.15m Sand, unconsolidated   | 807m     | South<br>West |
| GW109697       | 0.00m-6.10m UNCONSOLIDATED ALL SANDS                                       | 809m     | South<br>West |
| GW101818       | 0.00m-5.50m SAND   | 812m     | South<br>West |
| GW107425       | 0.00m-0.30m topsoil<br>0.30m-4.20m sand, yellow<br>4.20m-9.00m sand, white | 814m     | South<br>West |
| GW026375       | 0.00m-7.01m Sand   | 816m     | South         |
| GW101222       | 0.00m-7.78m Unconsolidated - all sand with sea shells                      | 829m     | South<br>West |
| GW108488       | 0.00m-9.26m Sand, unconsolidated   | 832m     | South<br>West |
| GW108411       | 0.00m-8.54m Sand, unconsolidated   | 837m     | South<br>West |
| GW111296       | 0.00m-5.49m UNCONSOLIDATED ALL SAND  | 838m     | South<br>West |

| Groundwater No | Drillers Log   | Distance | Direction     |
|----------------|--|----------|---------------|
| GW110440       | 0.00m-0.30m TOPSOIL<br>0.30m-7.00m SAND WHITE<br>7.00m-9.00m SAND GREY WITH SHELLS             | 847m     | South<br>West |
| GW110220       | 0.00m-6.00m ALL SAND   | 856m     | South<br>West |
| GW111741       | 0.00m-11.59m UNCONSOLIDATE ALL SAND  | 862m     | South<br>West |
| GW107746       | 0.00m-8.00m sand   | 865m     | South<br>West |
| GW101756       | 0.00m-6.10m Unconsolidated Sand  | 866m     | South<br>West |
| GW111498       | 0.00m-11.59m UNCONSOLIDADTED ALL SAND  | 873m     | South<br>West |
| GW107985       | 0.00m-5.49m sand   | 874m     | South<br>West |
| GW110656       | 0.00m-7.93m UNCONSOLIDATE ALL SANDS  | 880m     | South<br>West |
| GW101433       | 0.00m-5.49m SAND, UNCONSOLIDATED, WITH SEA SHELLS  | 889m     | South<br>West |
| GW110528       | 0.00m-6.71m UNCONSOLIDATED ALL SANDS   | 906m     | South<br>West |
| GW106233       | 0.00m-5.00m sand   | 910m     | South<br>West |
| GW107870       | 0.00m-4.27m sand   | 914m     | South<br>West |
| GW111743       | 0.00m-3.96m UNCONSOLIDATED ALL SAND  | 922m     | South<br>West |
| GW110654       | 0.00m-7.93m UNCONSOLIDATED ALL SANDS   | 930m     | South<br>West |
| GW106309       | 0.00m-8.85m sand   | 932m     | South<br>West |
| GW111710       | 0.00m-0.30m TOPSOIL<br>0.30m-7.00m SAND YELLOW   | 939m     | South<br>West |
| GW112396       | 0.00m-0.20m TOPSOIL<br>0.20m-3.00m SAND YELLOW<br>3.00m-7.00m SAND WHITE                       | 941m     | South<br>West |
| GW023285       | 0.00m-5.79m Sand Water Supply  | 946m     | South<br>West |
| GW107053       | 0.00m-9.00m sand   | 950m     | South<br>West |
| GW024319       | 0.00m-3.04m Sand<br>3.04m-4.57m Loam   | 952m     | South<br>West |
| GW111316       | 0.00m-37.00m SAND<br>37.00m-45.00m SANDSTONE FRACTURED<br>45.00m-162.00m SANDSTONE             | 952m     | North<br>West |
| GW106450       | 0.00m-0.30m topsoil<br>0.30m-1.20m clay, brown & sandstone fill<br>1.20m-2.00m sandstone, fill | 955m     | West          |
| GW101827       | 0.00m-7.93m UNCONSOLIDATED SAND WITH SMALL SEA SHELLS  | 957m     | South<br>West |
| GW106778       | 0.00m-7.63m sand, unconsolidated   | 957m     | South<br>West |
| GW111117       | 0.00m-8.54m UNCONSOLIDATED ALL SANDS   | 960m     | South<br>West |
| GW108441       | 0.00m-8.54m Sand, unconsolidated   | 964m     | South<br>West |
| GW108534       | 0.00m-0.30m Topsoil<br>0.30m-5.40m Sand, yellow<br>5.40m-7.00m Sand, white                     | 966m     | South<br>West |
| GW104656       | 0.00m-8.00m LT BROWN SAND MED. FINE GRAINED  | 973m     | South<br>West |
| GW106897       | 0.00m-0.30m Topsoil<br>0.30m-4.00m Sand, yellow<br>4.00m-6.00m Sand, yellow, with small shells | 980m     | South<br>West |

| Groundwater No | Drillers Log  | Distance | Direction     |
|----------------|---|----------|---------------|
| GW104655       | 0.00m-8.00m LT. BROWN SAND, MED. FINE GRAINED   | 987m     | South<br>West |
| GW109581       | 0.00m-7.32m UNCONSOLIDATED ALL SANDS  | 987m     | South<br>West |
| GW107317       | 0.00m-7.32m Sand, unconsolidated  | 992m     | South<br>West |
| GW100297       | 0.00m-5.00m SAND  | 995m     | South<br>West |
| GW104654       | 0.00m-8.00m LIGHT BROWN SAND, MEDIUM FINE GRAINED   | 995m     | South<br>West |
| GW104653       | 0.00m-8.00m LIGHT BROWN FINE MEDIUM GRAINED SAND  | 998m     | South<br>West |
| GW108573       | 0.00m-7.93m sand  | 999m     | South<br>West |
| GW106277       | 0.00m-6.50m sand  | 1000m    | South<br>West |
| GW104652       | 0.00m-8.00m LIGHT BROWN,SAND, MED FINE GRAINED  | 1002m    | South         |
| GW104657       | 0.00m-8.00m SAND LT BROWN MEDIUM GRAINED  | 1004m    | South         |
| GW106507       | 0.00m-0.30m topsoil<br>0.30m-2.50m sand, yellow<br>2.50m-3.90m sand, brown<br>3.90m-7.00m sand, white   | 1009m    | South<br>West |
| GW112389       | 0.00m-0.30m TOPSOIL<br>0.30m-3.30m SAND LIGHT BROWN<br>3.30m-7.00m SAND YELLOW<br>7.00m-9.00m SAND WHITE  | 1020m    | South<br>West |
| GW016114       | 0.00m-0.60m Made Ground Sand<br>0.60m-1.82m Sand Humus<br>1.82m-3.65m Sand Peaty<br>3.65m-6.09m Sand Muddy Fossils:shell Fragments<br>6.09m-7.31m Sand Fossils:shell Fragments<br>7.31m-9.44m Sand<br>9.44m-10.97m Clay Grey<br>10.97m-12.19m Sand White<br>12.19m-12.80m Sand Clay<br>12.80m-13.71m Clay Puggy | 1022m    | South<br>West |
| GW107370       | 0.00m-7.00m sand  | 1026m    | South<br>West |
| GW107313       | 0.00m-9.15m Sand, unconsolidated  | 1035m    | South<br>West |
| GW107628       | 0.00m-7.00m sand  | 1037m    | South<br>West |
| GW023135       | 0.00m-7.01m Sand Water Supply   | 1051m    | South<br>West |
| GW106826       | 0.00m-0.30m topsoil<br>0.30m-4.00m sand, yellow<br>4.00m-6.00m sand, yellow and shells  | 1068m    | South<br>West |
| GW105982       | 0.00m-0.30m topsoil<br>0.30m-4.00m sand, yellow<br>4.00m-7.00m sand, light brown  | 1071m    | South<br>West |
| GW110558       | 0.00m-0.50m TOPSOIL<br>0.50m-5.50m YELLOW SAND<br>5.50m-7.00m SAND GREY   | 1080m    | South<br>West |
| GW072968       | 0.00m-8.54m Unconsoldated Sand  | 1082m    | South<br>West |
| GW108597       | 0.00m-8.54m sand,   | 1086m    | South<br>West |
| GW114560       | 0.00m-8.85m UNCONSOLIDATED ALL SANDS.   | 1089m    | South<br>West |
| GW106352       | 0.00m-9.15m sand  | 1112m    | South<br>West |
| GW107689       | 0.00m-7.00m sand  | 1112m    | South<br>West |
| GW111091       | 0.00m-7.00m ALL SAND  | 1117m    | South<br>West |
| GW107780       | 0.00m-8.54m Sand, unconsolidated  | 1118m    | South<br>West |

| Groundwater No | Drillers Log   | Distance | Direction     |
|----------------|--|----------|---------------|
| GW109092       | 0.00m-0.30m TOPSOIL<br>0.30m-2.50m YELLOW SAND<br>2.50m-4.00m BROWN SAND   | 1118m    | South<br>West |
| GW106891       | 0.00m-6.00m Sand   | 1137m    | South<br>West |
| GW106899       | 0.00m-9.46m Sand, unconsolidated   | 1138m    | South<br>West |
| GW107350       | 0.00m-9.46m Sand, unconsolidated   | 1143m    | South<br>West |
| GW108432       | 0.00m-7.93m Sand, unconsolidated   | 1175m    | South<br>West |
| GW108631       | 0.00m-7.00m sand   | 1187m    | South<br>West |
| GW023191       | 0.00m-3.65m Sand Water Supply  | 1190m    | North<br>West |
| GW107153       | 0.00m-8.23m sand   | 1207m    | South<br>West |
| GW110781       | 0.00m-8.54m UNCONSOLIDATED ALL SANDS   | 1218m    | South<br>West |
| GW106873       | 0.00m-7.63m Sand, unconsolidated   | 1221m    | South<br>West |
| GW100209       | 0.00m-31.00m FINE WHITE SANDTONE<br>31.00m-38.00m GREY SHALE<br>38.00m-45.00m GREY SHALE & COARSE GREY SANDSTONE<br>45.00m-73.00m COARSE GREY SANDSTONE<br>73.00m-82.00m COARSE GREY SANDSTONE & GREY SHALE<br>82.00m-93.00m FINE GREY SANDSTONE<br>93.00m-102.00m MED GRAIN SANDSTONE<br>102.00m-104.00m COARSE GREY SANDSTONE<br>104.00m-108.00m FINE GREY SANDSTONE | 1226m    | North         |
| GW114839       | 0.00m-2.00m SAND BROWN<br>2.00m-5.00m SAND GREY  | 1226m    | South<br>West |
| GW111482       | 0.00m-7.63m UNCONSOLIDATED ALL SAND  | 1242m    | South<br>West |
| GW023194       | 0.00m-0.91m Sand<br>0.91m-4.87m Sand White Water Supply  | 1262m    | North<br>West |
| GW108295       | 0.00m-8.00m sand   | 1286m    | West          |
| GW105517       | 0.00m-3.96m UNCONSOLIDATED ALL SANDS   | 1291m    | South<br>West |
| GW107269       | 0.00m-1.40m fill, rocks bricks<br>1.40m-4.00m sand, brown<br>4.00m-6.00m sand, grey silty<br>6.00m-7.50m clay, grey  | 1293m    | South<br>West |
| GW108439       | 0.00m-8.00m Sand   | 1304m    | West          |
| GW111790       | 0.00m-6.00m SAND   | 1304m    | North<br>West |
| GW105629       | 0.00m-7.93m sand, unconsolidated with sea shells   | 1314m    | South<br>West |
| GW111149       | 0.00m-7.00m ALL SAND   | 1324m    | South<br>West |
| GW107207       | 0.00m-0.30m topsoil<br>0.30m-2.50m sand, brown<br>2.50m-4.00m sand, grey   | 1349m    | South<br>West |
| GW023423       | 0.00m-0.91m Made Ground<br>0.91m-2.13m Sand Red<br>2.13m-4.57m Sand White Water Supply   | 1367m    | South<br>West |
| GW107650       | 0.00m-0.30m topsoil<br>0.30m-2.50m sand, yellow<br>2.50m-4.00m sand, grey  | 1376m    | South<br>West |
| GW106167       | 0.00m-6.00m sand   | 1388m    | South<br>West |
| GW108623       | 0.00m-0.30m topsoil<br>0.30m-2.60m sand, yellow<br>2.60m-3.40m sand, silty grey<br>3.40m-6.00m sand, yellow  | 1408m    | South<br>West |

| Groundwater No | Drillers Log  | Distance | Direction     |
|----------------|---|----------|---------------|
| GW107744       | 0.00m-0.30m topsoil<br>0.30m-1.80m sand, dark brown<br>1.80m-4.00m sand, light brown  | 1415m    | South<br>West |
| GW023477       | 0.00m-1.82m Sand Grey<br>1.82m-6.40m Sand White Water Supply  | 1422m    | South<br>West |
| GW105588       | 0.00m-0.30m topsoil<br>0.30m-3.20m sand, yellow<br>3.20m-4.00m sand, yellow with shells   | 1426m    | South<br>West |
| GW107857       | 0.00m-0.30m topsoil<br>0.30m-7.00m sand, yellow   | 1434m    | South<br>West |
| GW108006       | 0.00m-3.96m sand  | 1446m    | South<br>West |
| GW111558       | 0.00m-6.00m ALL SAND  | 1448m    | South<br>West |
| GW106975       | 0.00m-0.30m Topsoil<br>0.30m-2.40m Sand, brown, Silty<br>2.40m-4.00m Sand, yellow   | 1451m    | South<br>West |
| GW107540       | 0.00m-7.00m sand  | 1452m    | South<br>West |
| GW107166       | 0.00m-0.30m topsoil<br>0.30m-3.00m sand, brown<br>3.00m-4.00m sand, grey  | 1457m    | South<br>West |
| GW110272       | 0.00m-7.01m UNCONSOLIDATE ALL SAND  | 1462m    | South<br>West |
| GW110845       | 0.00m-8.54m UNCONSOLIDATED ALL SAND   | 1465m    | South<br>West |
| GW100025       | 0.00m-6.00m SAND  | 1471m    | South<br>West |
| GW024062       | 0.00m-1.82m Sand Wet Nominal<br>0.00m-1.82m Clay Wet Nominal Heavy Nominal<br>1.82m-3.65m Clay Very Sandy Water Supply  | 1472m    | West          |
| GW101638       | 0.00m-7.63m Unconsolidated Sand   | 1487m    | South<br>West |
| GW106587       | 0.00m-0.30m topsoil<br>0.30m-2.50m sand, light brown<br>2.50m-4.00m sand, grey  | 1487m    | South<br>West |
| GW072161       | 0.00m-16.00m SANDY, MARINE CLAYS<br>16.00m-18.00m SANDSTONE (WEATHERED)<br>18.00m-20.50m SANDY CLAY BAND<br>20.50m-28.50m SANDSTONE, SILT BANDS<br>28.50m-31.00m WHITE SANDSTONE<br>31.00m-32.50m MEDIUM / LARGE SANDSTONE<br>32.50m-35.50m SANDSTONE, CLAY BANDS<br>35.50m-68.00m FINE / MEDIUM WHITE SANDSTONE<br>68.00m-71.00m SHALE BANDS<br>71.00m-72.00m MEDIUM / LARGE BANDS CLAY SANDSTONE<br>72.00m-89.00m WHITE SANDSTONE<br>89.00m-90.50m SHALE BANDS & GREY SANDSTONE | 1494m    | North         |
| GW108404       | 0.00m-7.63m Sand, unconsolidated  | 1499m    | South<br>West |
| GW110868       | 0.00m-0.30m TOPSOIL<br>0.30m-5.00m SAND YELLOW<br>5.00m-6.00m SAND GREY   | 1502m    | South<br>West |
| GW107890       | 0.00m-0.30m topsoil<br>0.30m-3.50m sand, yellow<br>3.50m-5.00m sand, grey   | 1503m    | South<br>West |
| GW109934       | 0.00m-0.30m TOPSOIL<br>0.30m-4.50m YELLOW SAND<br>4.50m-6.00m SAND GREY   | 1513m    | South<br>West |
| GW027664       | 0.00m-0.30m Loam Sand<br>0.30m-2.43m Sand Clean<br>2.43m-2.74m Peat Wood Bands<br>2.74m-3.04m Sand<br>3.04m-6.09m Sand White Water Supply<br>6.09m-6.11m Rock   | 1517m    | North<br>West |

| Groundwater No | Drillers Log   | Distance | Direction |
|----------------|--|----------|-----------|
| GW103941       | 0.00m-1.00m FILL<br>1.00m-4.00m WHITE/ORANGE SAND<br>4.00m-5.00m SAND<br>5.00m-9.00m WHITE SAND<br>9.00m-10.00m SAND LIGHT BROWN<br>10.00m-13.00m SAND LIGHT BROWN WITH PEAT<br>13.00m-19.00m CLAY GREY<br>19.00m-21.00m SANDSTONE YELLOW RED  | 1517m    | East      |
| GW103942       | 0.00m-7.00m SAND GREY<br>7.00m-9.00m SAND BROWN GREY<br>9.00m-12.00m SANDSTONE BROWN   | 1517m    | East      |
| GW103943       | 0.00m-1.00m WHITE SAND WITH SEA SHELLS<br>1.00m-3.00m WHITE SAND<br>3.00m-8.00m WHITE AND BROWN SAND<br>8.00m-10.00m BROWN SAND<br>10.00m-13.00m BROWN SANDSTONE<br>13.00m-14.00m GREY SANDSTONE   | 1517m    | East      |
| GW103944       | 0.00m-7.00m SAND GREY<br>7.00m-14.00m SAND,STONE,PEAT<br>14.00m-15.00m CLAY RED BROWN<br>15.00m-17.00m CLAY<br>17.00m-18.00m SANDSTONE BROWN AND GREY  | 1517m    | East      |
| GW103945       | 0.00m-1.00m FILL<br>1.00m-5.00m LIGHT BROWN SAND<br>5.00m-6.00m GREY SAND SEA SHELLS<br>6.00m-8.00m WHITE SAND<br>8.00m-15.00m GREY SAND WITH PEAT<br>15.00m-18.00m BROWN CLAY<br>18.00m-21.00m BROWN SANDSTONE  | 1517m    | East      |
| GW103946       | 0.00m-6.00m SAND WHITE BROWN<br>6.00m-7.00m SAND DARK GREY<br>7.00m-8.00m SAND WHITE<br>8.00m-9.00m SAND DARK GREY WHITE<br>9.00m-10.00m SAND DARK GREY W.B.<br>10.00m-11.00m SAND DARK GREY WHITE<br>11.00m-12.00m SAND WHITE<br>12.00m-13.00m SAND BROWN<br>13.00m-15.00m SANDSTONE WHITE<br>15.00m-17.00m SANDSTONE LIGHT BROWN   | 1517m    | East      |
| GW103947       | 0.00m-2.00m WHITE BROWN SAND<br>2.00m-3.00m WHITE SAND BROWN CLAY<br>3.00m-8.00m WHITE DARK BROWN SAND<br>8.00m-11.00m WHITE GREY SAND<br>11.00m-13.00m YELLOW BROWN SAND<br>13.00m-15.00m BROWN RED WHITE CLAY<br>15.00m-16.00m RED BROWN WHITE CLAY<br>16.00m-18.00m BROWN SANDSTONE   | 1517m    | East      |
| GW103948       | 0.00m-5.00m FILL<br>5.00m-10.00m GREY SAND WITH PEAT<br>10.00m-11.00m WHITE SAND WITH PEAT<br>11.00m-14.00m WHITE SAND WITH PEAT<br>14.00m-15.00m WHITE SAND WITH PEAT<br>15.00m-16.00m RED SANDSTONE WHITE CLAY<br>16.00m-18.00m RED SANDSTONE WHITE GREY CLAY  | 1517m    | East      |
| GW103949       | 0.00m-8.00m FILL<br>8.00m-9.00m WHITE SAND/SEA SHELLS<br>9.00m-13.00m GREY WHITE SAND<br>13.00m-14.00m GREY WHITE SAND AND PEAT<br>14.00m-15.00m WHITE SAND BROWN SAND<br>15.00m-16.00m DARK GREY WHITE SAND<br>16.00m-17.00m RED WHITE CLAY<br>17.00m-18.00m WHITE YELLOW CLAY<br>18.00m-19.00m WHITE YELLOW CLAY<br>19.00m-20.00m WHITE YELLOW GREY CLAY<br>20.00m-21.00m GREY SANDSTONE AND GREY CLAY | 1517m    | East      |
| GW103950       | 0.00m-6.00m FILL<br>6.00m-7.00m DARK GREY SAND<br>7.00m-15.00m DARK GREY SAND AND PEAT<br>15.00m-16.00m DARK GREY SAND AND GREY CLAY<br>16.00m-17.00m YELLOW RED BROWN CLAY<br>17.00m-18.00m YELLOW RED BROWN CLAY<br>18.00m-20.00m GREY SANDY CLAY<br>20.00m-21.00m GREY SANDSTONE  | 1517m    | East      |

| Groundwater No | Drillers Log  | Distance | Direction     |
|----------------|---|----------|---------------|
| GW103951       | 0.00m-1.30m FILL<br>1.30m-13.90m LAYED SANDS<br>13.90m-15.40m PEAT<br>15.40m-18.60m LAYED SANDS<br>18.60m-24.80m GREY CLAY<br>24.80m-38.20m GREY SANDSTONE<br>38.20m-47.30m MOIST WHITE SANDSTONE<br>47.30m-51.70m YELLOW SANDSTONE AND CLAY<br>51.70m-54.40m FRACTURED WHITE SANDSTONE<br>54.40m-62.30m GREY LITTLE SANDSTONE<br>62.30m-63.70m SHALE<br>63.70m-66.80m SHALE/QUARTZ/SANDSTONE<br>66.80m-85.70m GREY SANDSTONE<br>66.80m-85.70m GREY SANDSTONE<br>85.70m-93.20m WHITE SANDSTONE<br>93.20m-96.50m SILTSTONE<br>96.50m-101.80m WHITE SANDSTONE M.G<br>101.80m-117.20m DARK GREY SHALE<br>117.20m-130.10m WHITE M.G. SANDSTONE<br>130.10m-135.00m WHITE M.G. SANDSTONE<br>136.30m-139.50m WHITE M.G. SANDSTONE<br>136.30m-139.50m WHITE M.G. SANDSTONE<br>139.50m-142.00m GREY SANDSTONE M.G. | 1517m    | East          |
| GW109645       | 0.00m-8.54m UNCONSOLIDATED ALL SANDS.   | 1524m    | South<br>West |
| GW016108       | 0.00m-7.62m Sand  | 1531m    | South<br>West |
| GW023304       | 0.00m-0.91m Sand Black<br>0.91m-4.26m Sand White Water Supply   | 1531m    | South<br>West |
| GW109963       | 0.00m-8.00m SAND  | 1548m    | North<br>West |
| GW108406       | 0.00m-8.00m sand  | 1562m    | North<br>West |
| GW109964       | 0.00m-8.00m SAND  | 1569m    | North<br>West |
| GW023583       | 0.00m-8.22m Sand Water Supply   | 1571m    | South<br>West |
| GW106206       | 0.00m-5.18m sand, unconsolidated  | 1571m    | South<br>West |
| GW108588       | 0.00m-8.00m Sand  | 1571m    | North<br>West |
| GW109965       | 0.00m-8.00m SAND  | 1582m    | North<br>West |
| GW108495       | 0.00m-9.46m Sand, unconsolidated  | 1602m    | South<br>West |
| GW101328       | 0.00m-7.62m Unconsolidated, all sand, small seashells   | 1603m    | South<br>West |
| GW107531       | 0.00m-0.30m TOPSOIL<br>0.30m-7.20m YELLOW SAND<br>7.20m-14.00m GREY SAND  | 1620m    | South<br>West |
| GW109966       | 0.00m-3.00m CLAY  | 1635m    | North<br>West |
| GW107148       | 0.00m-5.79m sand  | 1646m    | South<br>West |
| GW114745       | 0.00m-0.12m CONCRETE PAVEMENT<br>0.12m-0.15m SANDSTONE<br>0.15m-13.95m SANDSTONE  | 1648m    | North<br>West |
| GW114744       | 0.00m-0.05m SAND CLAYEY,SANDY CLAY (FILL)<br>0.05m-17.00m SANDSTONE   | 1653m    | North<br>West |
| GW107344       | 0.00m-0.30m topsoil<br>0.30m-2.50m sand, grey<br>2.50m-4.00m sand, yellow   | 1661m    | South<br>West |
| GW105153       | 0.00m-5.49m UNCONSOLIDATED ALL SANDS  | 1662m    | South<br>West |
| GW024109       | 0.00m-2.13m Sand Water Supply   | 1672m    | North<br>West |
| GW023310       | 0.00m-3.65m Sand Water Supply   | 1677m    | South<br>West |
| GW101137       | 0.00m-6.71m Unconsolidated - all sand   | 1681m    | South<br>West |
| Groundwater No | Drillers Log  | Distance | Direction     |
|----------------|---|----------|---------------|
| GW106889       | 0.00m-7.93m Sand, unconsolidated  | 1685m    | South<br>West |
| GW108590       | 0.00m-3.96m Sand, unconsolidated then Clay  | 1692m    | South<br>West |
| GW105158       | 0.00m-4.58m UNCONSOLIDATED ALL SANDS  | 1697m    | South<br>West |
| GW013657       | 0.00m-7.62m Sand Water Supply   | 1718m    | South<br>West |
| GW107552       | 0.00m-9.15m Sand, unconsolidated  | 1721m    | South<br>West |
| GW107349       | 0.00m-7.32m Sand, unconsolidated  | 1748m    | South<br>West |
| GW108300       | 0.00m-7.32m sand  | 1754m    | South<br>West |
| GW106986       | 0.00m-7.01m Sand, unconsolidated  | 1768m    | South<br>West |
| GW109666       | 0.00m-10.68m UNCONSOLIDATED ALL SAND  | 1783m    | South         |
| GW106128       | 0.00m-0.30m topsoil<br>0.30m-1.50m sand, brown<br>1.50m-5.00m sand, yellow<br>5.00m-7.00m sand, yellow with some shells                               | 1790m    | South<br>West |
| GW105975       | 0.00m-8.23m sand, unconsolidated  | 1794m    | South<br>West |
| GW112342       | 0.00m-9.15m UNCONSOLIDATED ALL SAND.  | 1796m    | South<br>West |
| GW100473       | 0.00m-67.10m UNCONSOLIDATED. ALL SAND WITH SMALL SEA SHELLS   | 1797m    | South<br>West |
| GW107662       | 0.00m-0.30m topsoil<br>0.30m-4.50m sand, yellow<br>4.50m-6.00m sand, yellow and shells  | 1813m    | South<br>West |
| GW111713       | 0.00m-7.93m UNCONSOLIDATED ALL SANDS.   | 1816m    | South<br>West |
| GW108584       | 0.00m-5.79m Sand, unconsolidated  | 1830m    | South<br>West |
| GW106851       | 0.00m-2.00m sand, dry<br>2.00m-2.50m sand, wet<br>2.50m-3.00m peat, wet<br>3.00m-3.50m sand, wet  | 1831m    | South         |
| GW111227       | 0.00m-8.54m UNCONSOLIDATED ALL SAND.  | 1831m    | South<br>West |
| GW027569       | 0.00m-8.23m UNCONSOLIDATED ALL SANDS  | 1837m    | South<br>West |
| GW102226       | 0.00m-7.63m SAND, UNCONSOLIDATED  | 1839m    | South<br>West |
| GW025565       | 0.00m-5.48m Sand Water Supply   | 1843m    | South<br>West |
| GW110908       | 0.00m-0.30m ROAD BASE GREY<br>0.30m-1.00m SAND WITH GRAVEL GREY<br>1.00m-4.00m SAND DARK GREY<br>4.00m-6.00m SAND LIGHT GREY,BROWN                    | 1848m    | East          |
| GW111666       | 0.00m-7.63m UNCONSOLIDATED ALL SANDS  | 1850m    | South<br>West |
| GW106474       | 0.00m-7.63m sand  | 1851m    | South<br>West |
| GW107105       | 0.00m-7.26m sand, unconsolidated  | 1871m    | South<br>West |
| GW107973       | 0.00m-7.00m sand  | 1880m    | South<br>West |
| GW107542       | 0.00m-7.32m Sand, unconsolidated  | 1888m    | South<br>West |
| GW023837       | 0.00m-1.82m Sand Grey<br>1.82m-5.18m Sand White Water Supply  | 1889m    | South<br>West |
| GW110907       | 0.00m-0.30m ROADBASE GREY<br>0.30m-0.90m SILTY SAND<br>0.90m-1.20m SAND,SILTY GREY BROWN<br>1.20m-3.50m SAND DARK GREY<br>3.50m-5.80m SAND LIGHT GREY | 1889m    | East          |

| Groundwater No | Drillers Log  | Distance | Direction     |
|----------------|---|----------|---------------|
| GW110906       | 0.00m-1.00m ROADBASE GREY<br>1.00m-2.80m SAND GREY<br>2.80m-5.80m SAND BROWN  | 1899m    | East          |
| GW108796       | 0.00m-7.63m sand  | 1903m    | South<br>West |
| GW110898       | 0.00m-8.45m UNCONSOLIDATED ALL SAND   | 1918m    | South<br>West |
| GW106946       | 0.00m-6.00m sand  | 1928m    | South<br>West |
| GW111037       | 0.00m-6.00m ALL SAND  | 1928m    | South<br>West |
| GW110097       | 0.00m-6.71m UNCONSOLIDATED ALL SANDS  | 1937m    | South<br>West |
| GW111443       | 0.00m-9.15m UNCONSOLIDATED ALL SAND   | 1938m    | South<br>West |
| GW107883       | 0.00m-0.30m topsoil<br>0.30m-4.20m sand, brown<br>4.20m-5.20m sand, yellow<br>5.20m-7.00m sand, grey  | 1952m    | South<br>West |
| GW023257       | 0.00m-0.30m Sand Grey<br>0.30m-5.48m Sand White Water Supply  | 1955m    | South<br>West |
| GW106563       | 0.00m-6.71m sand, unconsolidated  | 1968m    | South<br>West |
| GW107026       | 0.00m-9.76m Sand, unconsolidated  | 1976m    | South         |
| GW027570       | 0.00m-0.30m Topsoil Sandy<br>0.30m-3.50m Sand White Moist<br>3.50m-5.33m Sand Light Brown Wet<br>5.33m-6.85m Peat Black Moist Sandy<br>6.85m-10.66m Sand White Wet Fine<br>6.85m-10.66m Peat Interlayere<br>10.66m-12.80m Sand Black Moist Peaty<br>12.80m-15.24m Sand White Wet Coarse<br>12.80m-15.24m Clay Seams | 1980m    | South<br>West |
| GW110911       | 0.00m-0.30m ROADBASE GREY<br>0.30m-2.20m SAND SILTY WITH GRAVEL GREY<br>2.20m-3.50m SAND WITH SHELLS GREY<br>3.50m-6.00m SAND WITH SHELLS DARK GREY/BLACK   | 1982m    | East          |

Drill Log Data Source: NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corp Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

## Geology 1:100,000





## Geology

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

## **Geological Units**

#### What are the Geological Units onsite?

| Symbol | Description  | Unit Name | Group | Sub Group | Age        | Dom Lith | Map Sheet | Dataset   |
|--------|--|-----------|-------|-----------|------------|----------|-----------|-----------|
| Qhbr   | Quartz sand, minor shell content, interdune (swale) silt and fine sand |           |       |           | Quaternary |          | Sydney    | 1:100,000 |

What are the Geological Units within the dataset buffer?

| Symbol | Description  | Unit Name | Group | Sub Group | Age        | Dom Lith | Map Sheet | Dataset   |
|--------|--|-----------|-------|-----------|------------|----------|-----------|-----------|
| mf     | Man-made fill. Dredged<br>estuarine sand and mud,<br>demolition rubble, industrial<br>and household waste. |           |       |           | Quaternary |          | Sydney    | 1:100,000 |
| mf/Qhs |  |           |       |           |            |          | Sydney    | 1:100,000 |
| Qhb    | Coarse quartz sand, verying amounts of shell fragment  |           |       |           | Quaternary |          | Sydney    | 1:100,000 |
| Qhbr   | Quartz sand, minor shell content, interdune (swale) silt and fine sand                                     |           |       |           | Quaternary |          | Sydney    | 1:100,000 |
| Qhs    | Peat, sandy peat, and mud.   |           |       |           | Quaternary |          | Sydney    | 1:100,000 |
| Rh     | Medium to coarse grained<br>quartz sandstone, very minor<br>shale and laminate lenses                      |           |       |           | Triassic   |          | Sydney    | 1:100,000 |
| water  |  |           |       |           |            |          | Sydney    | 1:100,000 |

### **Geological Structures**

What are the Geological Structures onsite?

| Feature     | Name | Description | Map Sheet | Dataset   |
|-------------|------|-------------|-----------|-----------|
| No features |      |             |           | 1:100,000 |

What are the Geological Structures within the dataset buffer?

| Feature     | Name | Description | Map Sheet | Dataset   |
|-------------|------|-------------|-----------|-----------|
| No features |      |             |           | 1:100,000 |

Geological Data Source : NSW Department of Industry, Resources & Energy

 $\ensuremath{\mathbb{C}}$  State of New South Wales through the NSW Department of Industry, Resources & Energy

## **Naturally Occurring Asbestos Potential**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

## **Naturally Occurring Asbestos Potential**

Naturally Occurring Asbestos Potential within the dataset buffer:

| Potential                  | Sym | Strat Name | Group | Formation | Scale | Min Age | Max Age | Rock<br>Type | Dom Lith | Description | Dist | Dir |
|----------------------------|-----|------------|-------|-----------|-------|---------|---------|--------------|----------|-------------|------|-----|
| No<br>records in<br>buffer |     |            |       |           |       |         |         |              |          |             |      |     |

Mining Subsidence District Data Source: © State of New South Wales through NSW Department of Industry, Resources & Energy

## Soil Landscapes





## Soils

#### Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

## **Soil Landscapes**

#### What are the onsite Soil Landscapes?

| Soil Code | Name     | Group | Process | Map Sheet | Scale     |
|-----------|----------|-------|---------|-----------|-----------|
| AEtg      | TUGGERAH |       | AEOLIAN | Sydney    | 1:100,000 |

#### What are the Soil Landscapes within the dataset buffer?

| Soil Code | Name              | Group | Process           | Map Sheet | Scale     |
|-----------|-------------------|-------|-------------------|-----------|-----------|
| AEtg      | TUGGERAH          |       | AEOLIAN           | Sydney    | 1:100,000 |
| BEna      | NARRABEEN         |       | BEACH             | Sydney    | 1:100,000 |
| DTxx      | DISTURBED TERRAIN |       | DISTURBED TERRAIN | Sydney    | 1:100,000 |
| ERIa      | LAMBERT           |       | EROSIONAL         | Sydney    | 1:100,000 |
| SWwa      | WARRIEWOOD        |       | SWAMP             | Sydney    | 1:100,000 |
| WATER     | WATER             |       | WATER             | Sydney    | 1:100,000 |

Soils Landscapes Data Source : NSW Office of Environment and Heritage

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### **Atlas of Australian Soils**





## Soils

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

## **Atlas of Australian Soils**

Soil mapping units and Australian Soil Classification orders within the dataset buffer:

| Map Unit<br>Code | Soil Order | Map Unit Description  | Distance |
|------------------|------------|---|----------|
| Cb27             | Podosol    | Coastal sand plains and dunes, lagoons, and swampy areas: chief soils are leached sands (Uc2.3 and Uc2.2). Associated are dunes of siliceous sands (Uc1.2) and/or calcareous sands (Uc1.1) fringing the coastline; and swampy areas of (Uf6) soils and (Uc1.2) soils with peaty surfaces. Unit Cb27 has similarities with units Cb28 and Ca6. | 0m       |

Atlas of Australian Soils Data Source: CSIRO

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#### **Acid Sulfate Soils**





## Acid Sulfate Soils

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

## **Environmental Planning Instrument - Acid Sulfate Soils**

What is the on-site Acid Sulfate Soil Plan Class that presents the largest environmental risk?

| Soil Class | Description   | EPI                                       |
|------------|---|---|
| 4          | Works more than 2 metres below natural ground surface present an environmental risk; Works by which the watertable is likely to be lowered more than 2 metres below natural ground surface, present an environmental risk | Rockdale Local<br>Environmental Plan 2011 |

#### If the on-site Soil Class is 5, what other soil classes exist within 500m?

| Soil Class | Description | EPI | Distance | Direction |
|------------|-------------|-----|----------|-----------|
| N/A        |             |     |          |           |

Acid Sulfate Data Source Accessed 23/10/2018: NSW Crown Copyright - Planning and Environment Creative Commons 4.0 © Commonwealth of Australia https://creativecommons.org/licenses/by/4.0/

## **Atlas of Australian Acid Sulfate Soils**





## **Acid Sulfate Soils**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

## **Atlas of Australian Acid Sulfate Soils**

Atlas of Australian Acid Sulfate Soil categories within the dataset buffer:

| Class | Description   | Distance |
|-------|---|----------|
| В     | Low Probability of occurrence. 6-70% chance of occurrence.  | 0m       |
| A     | High Probability of occurrence. >70% chance of occurrence.  | 14m      |
| С     | Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas. | 231m     |

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO

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## **Dryland Salinity**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

### **Dryland Salinity - National Assessment**

Is there Dryland Salinity - National Assessment data onsite?

#### No

Is there Dryland Salinity - National Assessment data within the dataset buffer?

No

What Dryland Salinity assessments are given?

| Assessment 2000 | Assessment 2020 | Assessment 2050 | Distance | Direction |
|-----------------|-----------------|-----------------|----------|-----------|
| N/A             | N/A             | N/A             | N/A      | N/A       |

Dryland Salinity Data Source : National Land and Water Resources Audit

The Commonwealth and all suppliers of source data used to derive the maps of "Australia, Forecast Areas Containing Land of High Hazard or Risk of Dryland Salinity from 2000 to 2050" do not warrant the accuracy or completeness of information in this product. Any person using or relying upon such information does so on the basis that the Commonwealth and data suppliers shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information. Any persons using this information do so at their own risk.

In many cases where a high risk is indicated, less than 100% of the area will have a high hazard or risk.

## **Dryland Salinity Potential of Western Sydney**

#### Dryland Salinity Potential of Western Sydney within the dataset buffer?

| Feature Id | Classification        | Description | Distance | Direction |
|------------|-----------------------|-------------|----------|-----------|
| N/A        | Outside Data Coverage |             |          |           |

Dryland Salinity Potential of Western Sydney Data Source : NSW Office of Environment and Heritage Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

## **Mining Subsidence Districts**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

## **Mining Subsidence Districts**

#### Mining Subsidence Districts within the dataset buffer:

| District  | Distance | Direction |
|---|----------|-----------|
| There are no Mining Subsidence Districts within the report buffer |          |           |

Mining Subsidence District Data Source: © Land and Property Information (2016) Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

## **Environmental Zoning**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

## **State Environmental Planning Policy Protected Areas**

Are there any State Environmental Planning Policy Protected Areas onsite or within the dataset buffer?

| Dataset                          | Onsite | Within Site Buffer | Distance |
|----------------------------------|--------|--------------------|----------|
| SEPP14 - Coastal Wetlands        | No     | No                 | N/A      |
| SEPP26 - Littoral Rainforests    | No     | No                 | N/A      |
| SEPP71 - Coastal Protection Zone | No     | No                 | N/A      |

SEPP Protected Areas Data Source: NSW Department of Planning & Environment Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

## State Environmental Planning Policy Major Developments (2005)

#### State Environmental Planning Policy Major Developments within the dataset buffer:

| Map Id | Feature                  | Effective Date | Distance | Direction |
|--------|--------------------------|----------------|----------|-----------|
| N/A    | No records within buffer |                |          |           |

SEPP Major Development Data Source: NSW Department of Planning & Environment Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

## **State Environmental Planning Policy Strategic Land Use Areas**

#### State Environmental Planning Policy Strategic Land Use Areas onsite or within the dataset buffer:

| Strategic Land Use       | SEPPNo | Effective Date | Amendment | Amendment<br>Year | Distance | Direction |
|--------------------------|--------|----------------|-----------|-------------------|----------|-----------|
| No records within buffer |        |                |           |                   |          |           |

SEPP Strategic Land Use Data Source: NSW Department of Planning & Environment Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

## **EPI Planning Zones**





## **Environmental Planning Instrument**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

## Land Zoning

What Environmental Planning Instrument Land Zones exist within the dataset buffer?

| Zone | Description                      | Purpose            | LEP or SEPP                               | Published<br>Date | Commenced<br>Date | Currency<br>Date | Amendment         | Distance | Direction     |
|------|----------------------------------|--------------------|---|-------------------|-------------------|------------------|-------------------|----------|---------------|
| R2   | Low Density<br>Residential       |                    | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 0m       | Onsite        |
| SP2  | Infrastructure                   | Classified<br>Road | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 0m       | Onsite        |
| RE1  | Public Recreation                |                    | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 0m       | North         |
| R2   | Low Density<br>Residential       |                    | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 20m      | North<br>East |
| SP2  | Infrastructure                   | Classified<br>Road | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 106m     | South<br>West |
| RU4  | Primary Production<br>Small Lots |                    | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 123m     | West          |
| RE1  | Public Recreation                |                    | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 136m     | West          |
| RE1  | Public Recreation                |                    | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 137m     | South         |
| RE1  | Public Recreation                |                    | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 141m     | North         |
| SP2  | Infrastructure                   | Drainage           | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 163m     | North         |
| RE1  | Public Recreation                |                    | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 190m     | West          |
| B1   | Neighbourhood<br>Centre          |                    | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 196m     | South<br>West |
| UL   | Unzoned Land                     |                    | Rockdale Local<br>Environmental Plan 2011 | 11/07/2014        | 11/07/2014        | 12/10/2018       | Amendment<br>No 1 | 207m     | North         |
| R2   | Low Density<br>Residential       |                    | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 209m     | South         |
| R3   | Medium Density<br>Residential    |                    | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 234m     | South<br>West |
| RE1  | Public Recreation                |                    | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 296m     | West          |
| UL   | Unzoned Land                     |                    | Rockdale Local<br>Environmental Plan 2011 | 11/07/2014        | 11/07/2014        | 12/10/2018       | Amendment<br>No 1 | 313m     | East          |
| UL   | Unzoned Land                     |                    | Rockdale Local<br>Environmental Plan 2011 | 11/07/2014        | 11/07/2014        | 12/10/2018       | Amendment<br>No 1 | 333m     | West          |
| SP2  | Infrastructure                   | Airport            | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 356m     | North<br>East |
| SP2  | Infrastructure                   | Airport            | Rockdale Local<br>Environmental Plan 2011 | 11/07/2014        | 11/07/2014        | 12/10/2018       | Amendment<br>No 1 | 421m     | North<br>East |
| UL   | Unzoned Land                     |                    | Rockdale Local<br>Environmental Plan 2011 | 11/07/2014        | 11/07/2014        | 12/10/2018       | Amendment<br>No 1 | 429m     | East          |
| SP2  | Infrastructure                   | Airport            | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 438m     | East          |
| UL   | Unzoned Land                     |                    | Rockdale Local<br>Environmental Plan 2011 | 11/07/2014        | 11/07/2014        | 12/10/2018       | Amendment<br>No 1 | 570m     | North<br>East |
| RE1  | Public Recreation                |                    | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 756m     | South<br>West |
| SP2  | Infrastructure                   | Drainage           | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 766m     | West          |
| RE1  | Public Recreation                |                    | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 800m     | West          |
| SP2  | Infrastructure                   | Classified<br>Road | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 890m     | South<br>West |
| R2   | Low Density<br>Residential       |                    | Rockdale Local<br>Environmental Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 896m     | West          |

| Zone | Description                 | Purpose | LEP or SEPP                                 | Published<br>Date | Commenced<br>Date | Currency<br>Date | Amendment         | Distance | Direction     |
|------|-----------------------------|---------|---|-------------------|-------------------|------------------|-------------------|----------|---------------|
| R4   | High Density<br>Residential |         | Rockdale Local<br>Environmental Plan 2011   | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 913m     | South<br>West |
| SP2  | Infrastructure              | Airport | Botany Bay Local<br>Environmental Plan 2013 | 21/06/2013        | 21/06/2013        | 19/02/2016       |                   | 939m     | North<br>East |
| SP2  | Infrastructure              | School  | Rockdale Local<br>Environmental Plan 2011   | 30/08/2013        | 30/08/2013        | 12/10/2018       | Amendment<br>No 4 | 944m     | South<br>West |
| RE1  | Public Recreation           |         | Rockdale Local<br>Environmental Plan 2011   | 05/12/2011        | 05/12/2011        | 12/10/2018       |                   | 963m     | West          |

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## **Environmental Planning Instrument**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

### **Minimum Lot Size**

What are the onsite Environmental Planning Instrument Minimum Lot Sizes?

| Symbol | Minimum<br>Lot Size | LEP or SEPP                                  | Published<br>Date | Commenced<br>Date | Currency<br>Date | Amendment | Percentage<br>of Site Area |
|--------|---------------------|--|-------------------|-------------------|------------------|-----------|----------------------------|
| G      | 450 m²              | Rockdale Local<br>Environmental Plan<br>2011 | 05/12/2011        | 05/12/2011        | 04/05/2018       |           | 97.36                      |

### **Maximum Height of Buildings**

What are the onsite Environmental Planning Instrument Maximum Height of Buildings?

| Symbol | Maximum<br>Height of<br>Building | LEP or SEPP                                  | Published Date | Commenced<br>Date | Currency<br>Date | Amendment | Percentage of Site Area |
|--------|----------------------------------|--|----------------|-------------------|------------------|-----------|-------------------------|
| 9      | 8.50 m                           | Rockdale Local<br>Environmental Plan<br>2011 | 05/12/2011     | 05/12/2011        | 12/10/2018       |           | 95.1                    |

### Floor Space Ratio

What are the onsite Environmental Planning Instrument Floor Space Ratios?

| Symbol | Floor<br>Space<br>Ratio | LEP or SEPP | Published<br>Date | Commenced Date | Currency<br>Date | Amendment | Percentage<br>of Site Area |
|--------|-------------------------|-------------|-------------------|----------------|------------------|-----------|----------------------------|
| 4      | 0.50                    | LEP         | 05/12/2011        | 05/12/2011     | 12/10/2018       |           | 95.1                       |

### Land Application

What are the onsite Environmental Planning Instrument Land Applications?

| Application Type | LEP or SEPP                                  | Published<br>Date | Commenced<br>Date | Currency<br>Date | Amendment | Percentage<br>of Site Area |
|------------------|--|-------------------|-------------------|------------------|-----------|----------------------------|
| Included         | Rockdale Local<br>Environmental<br>Plan 2011 | 05/12/2011        | 05/12/2011        | 05/12/2011       |           | 100                        |

### Land Reservation Acquisition

What are the onsite Environmental Planning Instrument Land Reservation Acquisitions?

| Reservation    | LEP or SEPP                                  | Published<br>Date | Commenced<br>Date | Currency<br>Date | Amendment | Comments | Percentage<br>of Site Area |
|----------------|--|-------------------|-------------------|------------------|-----------|----------|----------------------------|
| Infrastructure | Rockdale Local<br>Environmental<br>Plan 2011 | 05/12/2011        | 05/12/2011        | 12/10/2018       |           |          | 4.9                        |

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### **Heritage Items**





## Heritage

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

#### **State Heritage Register - Curtilages**

What are the State Heritage Register Items located within the dataset buffer?

| Map Id  | Name  | Address   | LGA      | Listing<br>Date | Listing No | Plan No | Distance | Direction     |
|---------|---|---|----------|-----------------|------------|---------|----------|---------------|
| 5045758 | Kyeemagh Market<br>Gardens                                  | Occupation Road,<br>Rockdale  | Rockdale | 02/04/1999      | 01393      | 2260    | 123m     | West          |
| 5053886 | Western Outfall<br>Main Sewer<br>(Rockdale to<br>Homesbush) | Valda Avenue (off<br>south side of<br>Kogarah Golf<br>Course) Arncliffe | Rockdale | 15/11/2002      | 01647      | 2060    | 793m     | North<br>West |
| 5045744 | Arncliffe Market<br>Gardens                                 | 212 West Botany<br>Street Banksia                                       | Rockdale | 02/04/1999      | 01395      | 2258    | 868m     | West          |

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## **Environmental Planning Instrument - Heritage**

| Map Id           | Name  | Classification | Significance | EPI  | Published<br>Date | Commenced<br>Date | Currency<br>Date | Distance | Direction     |
|------------------|---|----------------|--------------|--|-------------------|-------------------|------------------|----------|---------------|
| 1201             | Market Gardens  | Item - General | State        | Rockdale Local<br>Environmental Plan<br>2011   | 05/12/2011        | 05/12/2011        | 21/10/2016       | 123m     | West          |
| 1168             | Cook Park   | Item - General | Local        | Rockdale Local<br>Environmental Plan<br>2011   | 05/12/2011        | 05/12/2011        | 21/10/2016       | 137m     | South         |
| 1238             | Southern and<br>Western Suburbs<br>Ocean Outfall<br>Sewer (SWSOOS),<br>pipeline, aqueduct<br>and bridge | Item - General | Local        | Rockdale Local<br>Environmental Plan<br>2011   | 05/12/2011        | 05/12/2011        | 21/10/2016       | 389m     | North East    |
| 193              | Market Gardens  | Item - General | State        | Rockdale Local<br>Environmental Plan<br>2011   | 05/12/2011        | 05/12/2011        | 21/10/2016       | 868m     | West          |
| l3,l168,l<br>170 | Commonwealth<br>Water Pumping<br>Station and<br>Sewerage<br>Pumping Station                             | Item - General | State        | Botany Bay Local<br>Environmental Plan<br>2013 | 21/06/2013        | 21/06/2013        | 09/10/2015       | 939m     | North East    |
| 1166             | Houses - Brighton<br>Parade precinct  | Item - General | Local        | Rockdale Local<br>Environmental Plan<br>2011   | 05/12/2011        | 05/12/2011        | 21/10/2016       | 948m     | South<br>West |

What are the EPI Heritage Items located within the dataset buffer?

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## **Natural Hazards**

Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

## **Bush Fire Prone Land**

What are the nearest Bush Fire Prone Land Categories that exist within the dataset buffer?

| Bush Fire Prone Land Category | Distance | Direction |
|-------------------------------|----------|-----------|
| No records within buffer      |          |           |

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## Ecological Constraints - Native Vegetation & RAMSAR Wetlands





Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

## **Native Vegetation**

What native vegetation exists within the dataset buffer?

| Map<br>ID | Map Unit Name                               | Threatened<br>Ecological<br>Community<br>NSW | Threatened<br>Ecological<br>Community<br>EPBC Act                     | Understorey                          | Disturbance                       | Disturbance<br>Index | Dominant<br>Species                                   | Dist | Direction     |
|-----------|---|--|---|--------------------------------------|-----------------------------------|----------------------|---|------|---------------|
| Urban_E/N | Urban_E/N: Urban<br>Exotic/Native           |  |   | 00: Not<br>assessed                  | 00: Not<br>assessed               | 0: Not<br>assessed   | Urban<br>Exotic/Native                                | 0m   | Onsite        |
| S_HL05    | S_HL05: Coastal<br>Foredune Wattle Scrub    |  |   | 19: Dense<br>heath                   | 20:<br>Previously<br>cleared 1943 | 3: High              | A.longifolia_soph<br>orae/L.laevigatu<br>m            | 171m | East          |
| S_GL01    | S_GL01: Beach Spinfex<br>Grassland          |  |   | 00: Not<br>assessed                  | 00: Not<br>assessed               | 0: Not<br>assessed   | S.sericea/C.glauc escens                              | 210m | South<br>East |
| S_SW01    | S_SW01: Estuarine<br>Mangrove Forest        |  |   | 00: Not<br>assessed                  | 20:<br>Previously<br>cleared 1943 | 3: High              | Mangroves   | 324m | West          |
| Weed_Ex   | Weed_Ex: Weeds and Exotics                  |  |   | 00: Not<br>assessed                  | 00: Not<br>assessed               | 0: Not<br>assessed   | Exotic Species >90%cover                              | 594m | East          |
| Plant_n   | Plant_n: Plantation (native and/or exotic)  |  |   | 00: Not<br>assessed                  | 00: Not<br>assessed               | 0: Not<br>assessed   | Native or Exotic<br>Plantations                       | 630m | North<br>West |
| S_FrW06   | S_FrW06: Estuarine<br>Reedland              | Swamp Oak<br>Floodplain<br>Forest            |   | 00: Not<br>assessed                  | 00: Not<br>assessed               | 0: Not<br>assessed   | P.australis/B.junc<br>ea                              | 642m | North<br>West |
| S_FoW08   | S_FoW08: Estuarine<br>Swamp Oak Forest      | Swamp Oak<br>Floodplain<br>Forest            |   | 31: Saltmarsh                        | 15: Regrowth                      | 2: Moderate          | C.glauca  | 715m | North<br>West |
| S_FoW03   | S_FoW03: Coastal<br>Freshwater Swamp Forest |  |   | 15: Grassy<br>natives and<br>exotics | 23: Plantings                     | 4: Very high         | C.glauca  | 745m | North<br>West |
| S_SW02    | S_SW02: Estuarine<br>Saltmarsh              | Coastal<br>Saltmarsh                         | Subtropical<br>and<br>Temperate<br>Coastal<br>Saltmarsh<br>(possible) | 00: Not<br>assessed                  | 00: Not<br>assessed               | 0: Not<br>assessed   | S.repens/S.quinq<br>ueflora/S.virginic<br>usJ.krausii | 761m | West          |
| Water     | Water                                       |  |   | 00: Not<br>assessed                  | 00: Not<br>assessed               | 0: Not<br>assessed   | Water   | 771m | North<br>West |

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## **RAMSAR Wetlands**

What RAMSAR Wetland areas exist within the dataset buffer?

| Map Id | RAMSAR Name          | Wetland Name | Designation Date | Source | Distance | Direction |
|--------|----------------------|--------------|------------------|--------|----------|-----------|
| N/A    | No records in buffer |              |                  |        |          |           |

RAMSAR Wetlands Data Source: © Commonwealth of Australia - Department of Environment

#### Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

### **Groundwater Dependent Ecosystems Atlas**

| Туре | GDE Potential            | Geomorphology | Ecosystem<br>Type | Aquifer Geology | Distance |
|------|--------------------------|---------------|-------------------|-----------------|----------|
| N/A  | No records within buffer |               |                   |                 |          |

Groundwater Dependent Ecosystems Atlas Data Source: The Bureau of Meteorology

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#### Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

#### Inflow Dependent Ecosystems Likelihood

| Туре | IDE Likelihood           | Geomorphology | Ecosystem Type | Aquifer Geology | Distance |
|------|--------------------------|---------------|----------------|-----------------|----------|
| N/A  | No records within buffer |               |                |                 |          |

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology

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Jacobson Avenue & Beehag Street, Kyeemagh, NSW 2216

### **NSW BioNet Atlas**

Species on the NSW BioNet Atlas that have a NSW or federal conservation status, a NSW sensitivity status, or are listed under a migratory species agreement, and are within 10km of the site?

| Kingdom  | Class    | Scientific                            | Common                        | NSW Conservation<br>Status | NSW Sensitivity<br>Class | Federal<br>Conservation Status | Migratory Species<br>Agreements |
|----------|----------|---------------------------------------|-------------------------------|----------------------------|--------------------------|--------------------------------|---------------------------------|
| Animalia | Amphibia | Crinia tinnula                        | Wallum Froglet                | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Amphibia | Litoria aurea                         | Green and<br>Golden Bell Frog | Endangered                 | Not Sensitive            | Vulnerable                     |                                 |
| Animalia | Aves     | Actitis hypoleucos                    | Common<br>Sandpiper           | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves     | Anseranas<br>semipalmata              | Magpie Goose                  | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves     | Anthochaera<br>phrygia                | Regent<br>Honeyeater          | Critically<br>Endangered   | Not Sensitive            | Critically Endangered          |                                 |
| Animalia | Aves     | Apus pacificus                        | Fork-tailed Swift             | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves     | Ardea ibis                            | Cattle Egret                  | Not Listed                 | Not Sensitive            | Not Listed                     | CAMBA;JAMBA                     |
| Animalia | Aves     | Ardenna<br>carneipes                  | Flesh-footed<br>Shearwater    | Vulnerable                 | Not Sensitive            | Not Listed                     | ROKAMBA;JAMBA                   |
| Animalia | Aves     | Ardenna grisea                        | Sooty Shearwater              | Not Listed                 | Not Sensitive            | Not Listed                     | CAMBA;JAMBA                     |
| Animalia | Aves     | Ardenna pacificus                     | Wedge-tailed<br>Shearwater    | Not Listed                 | Not Sensitive            | Not Listed                     | JAMBA                           |
| Animalia | Aves     | Ardenna<br>tenuirostris               | Short-tailed<br>Shearwater    | Not Listed                 | Not Sensitive            | Not Listed                     | Rokamba;Jamba                   |
| Animalia | Aves     | Arenaria interpres                    | Ruddy Turnstone               | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves     | Artamus<br>cyanopterus<br>cyanopterus | Dusky<br>Woodswallow          | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves     | Botaurus<br>poiciloptilus             | Australasian<br>Bittern       | Endangered                 | Not Sensitive            | Endangered                     |                                 |
| Animalia | Aves     | Burhinus<br>grallarius                | Bush Stone-<br>curlew         | Endangered                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves     | Calamanthus fuliginosus               | Striated Fieldwren            | Endangered                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves     | Calidris<br>acuminata                 | Sharp-tailed<br>Sandpiper     | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves     | Calidris alba                         | Sanderling                    | Vulnerable                 | Not Sensitive            | Not Listed                     | Rokamba;Camba;<br>Jamba         |
| Animalia | Aves     | Calidris bairdii                      | Baird's Sandpiper             | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;JAMBA                   |
| Animalia | Aves     | Calidris canutus                      | Red Knot                      | Not Listed                 | Not Sensitive            | Endangered                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves     | Calidris<br>ferruginea                | Curlew Sandpiper              | Endangered                 | Not Sensitive            | Critically Endangered          | Rokamba;camba;<br>Jamba         |
| Animalia | Aves     | Calidris<br>melanotos                 | Pectoral<br>Sandpiper         | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;JAMBA                   |
| Animalia | Aves     | Calidris ruficollis                   | Red-necked Stint              | Not Listed                 | Not Sensitive            | Not Listed                     | Rokamba;camba;<br>Jamba         |
| Animalia | Aves     | Calidris<br>subminuta                 | Long-toed Stint               | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves     | Calidris<br>tenuirostris              | Great Knot                    | Vulnerable                 | Not Sensitive            | Critically Endangered          | Rokamba;Camba;<br>Jamba         |
| Animalia | Aves     | Callocephalon fimbriatum              | Gang-gang<br>Cockatoo         | Vulnerable                 | Category 3               | Not Listed                     |                                 |
| Animalia | Aves     | Calyptorhynchus<br>Iathami            | Glossy Black-<br>Cockatoo     | Vulnerable                 | Category 2               | Not Listed                     |                                 |

| Kingdom  | Class | Scientific                   | Common                       | NSW Conservation<br>Status              | NSW Sensitivity<br>Class | Federal<br>Conservation Status | Migratory Species<br>Agreements |
|----------|-------|------------------------------|------------------------------|---|--------------------------|--------------------------------|---------------------------------|
| Animalia | Aves  | Charadrius<br>Ieschenaultii  | Greater Sand-<br>plover      | Vulnerable                              | Not Sensitive            | Vulnerable                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves  | Charadrius<br>mongolus       | Lesser Sand-<br>plover       | Vulnerable                              | Not Sensitive            | Endangered                     | Rokamba;camba;<br>Jamba         |
| Animalia | Aves  | Charadrius<br>veredus        | Oriental Plover              | Not Listed                              | Not Sensitive            | Not Listed                     | ROKAMBA;JAMBA                   |
| Animalia | Aves  | Chlidonias<br>leucopterus    | White-winged<br>Black Tern   | Not Listed                              | Not Sensitive            | Not Listed                     | Rokamba;camba;<br>Jamba         |
| Animalia | Aves  | Circus assimilis             | Spotted Harrier              | Vulnerable                              | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Daphoenositta<br>chrysoptera | Varied Sittella              | Vulnerable                              | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Dasyornis<br>brachypterus    | Eastern<br>Bristlebird       | Endangered                              | Category 2               | Endangered                     |                                 |
| Animalia | Aves  | Diomedea<br>exulans          | Wandering<br>Albatross       | Endangered                              | Not Sensitive            | Endangered                     | JAMBA                           |
| Animalia | Aves  | Diomedea gibsoni             | Gibson's<br>Albatross        | Vulnerable                              | Not Sensitive            | Vulnerable                     |                                 |
| Animalia | Aves  | Egretta sacra                | Eastern Reef<br>Egret        | Not Listed                              | Not Sensitive            | Not Listed                     | CAMBA                           |
| Animalia | Aves  | Epthianura<br>albifrons      | White-fronted<br>Chat        | Endangered<br>Population,<br>Vulnerable | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Erythrotriorchis radiatus    | Red Goshawk                  | Critically<br>Endangered                | Category 2               | Vulnerable                     |                                 |
| Animalia | Aves  | Esacus<br>magnirostris       | Beach Stone-<br>curlew       | Critically<br>Endangered                | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Falco subniger               | Black Falcon                 | Vulnerable                              | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Fregata ariel                | Lesser Frigatebird           | Not Listed                              | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves  | Gallinago<br>hardwickii      | Latham's Snipe               | Not Listed                              | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves  | Gelochelidon<br>nilotica     | Gull-billed Tern             | Not Listed                              | Not Sensitive            | Not Listed                     | CAMBA                           |
| Animalia | Aves  | Gygis alba                   | White Tern                   | Vulnerable                              | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Haematopus<br>fuliginosus    | Sooty<br>Oystercatcher       | Vulnerable                              | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Haematopus<br>longirostris   | Pied<br>Oystercatcher        | Endangered                              | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Haliaeetus<br>leucogaster    | White-bellied<br>Sea-Eagle   | Vulnerable                              | Not Sensitive            | Not Listed                     | CAMBA                           |
| Animalia | Aves  | Hieraaetus<br>morphnoides    | Little Eagle                 | Vulnerable                              | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Hirundapus<br>caudacutus     | White-throated<br>Needletail | Not Listed                              | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves  | Hydroprogne<br>caspia        | Caspian Tern                 | Not Listed                              | Not Sensitive            | Not Listed                     | CAMBA;JAMBA                     |
| Animalia | Aves  | Ixobrychus<br>flavicollis    | Black Bittern                | Vulnerable                              | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Lathamus<br>discolor         | Swift Parrot                 | Endangered                              | Category 3               | Critically Endangered          |                                 |
| Animalia | Aves  | Limicola<br>falcinellus      | Broad-billed<br>Sandpiper    | Vulnerable                              | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves  | Limosa lapponica             | Bar-tailed Godwit            | Not Listed                              | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves  | Limosa limosa                | Black-tailed<br>Godwit       | Vulnerable                              | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves  | Lophochroa<br>leadbeateri    | Major Mitchell's<br>Cockatoo | Vulnerable                              | Category 2               | Not Listed                     |                                 |
| Animalia | Aves  | Lophoictinia isura           | Square-tailed Kite           | Vulnerable                              | Category 3               | Not Listed                     |                                 |
| Animalia | Aves  | Macronectes<br>giganteus     | Southern Giant<br>Petrel     | Endangered                              | Not Sensitive            | Endangered                     |                                 |
| Animalia | Aves  | Macronectes halli            | Northern Giant-<br>Petrel    | Vulnerable                              | Not Sensitive            | Vulnerable                     |                                 |
| Animalia | Aves  | Merops ornatus               | Rainbow Bee-<br>eater        | Not Listed                              | Not Sensitive            | Not Listed                     | JAMBA                           |

| Kingdom  | Class | Scientific                       | Common  | NSW Conservation<br>Status | NSW Sensitivity<br>Class | Federal<br>Conservation Status | Migratory Species<br>Agreements |
|----------|-------|----------------------------------|---|----------------------------|--------------------------|--------------------------------|---------------------------------|
| Animalia | Aves  | Motacilla citreola               | Citrine Wagtail                                 | Not Listed                 | Not Sensitive            | Not Listed                     | CAMBA                           |
| Animalia | Aves  | Neochmia<br>ruficauda            | Star Finch                                      | Presumed Extinct           | Not Sensitive            | Endangered                     |                                 |
| Animalia | Aves  | Neophema<br>chrysogaster         | Orange-bellied<br>Parrot                        | Critically<br>Endangered   | Category 3               | Critically Endangered          |                                 |
| Animalia | Aves  | Neophema<br>pulchella            | Turquoise Parrot                                | Vulnerable                 | Category 3               | Not Listed                     |                                 |
| Animalia | Aves  | Ninox strenua                    | Powerful Owl                                    | Vulnerable                 | Category 3               | Not Listed                     |                                 |
| Animalia | Aves  | Numenius<br>madagascariensi<br>s | Eastern Curlew                                  | Not Listed                 | Not Sensitive            | Critically Endangered          | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves  | Numenius<br>minutus              | Little Curlew                                   | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves  | Numenius<br>phaeopus             | Whimbrel  | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves  | Onychoprion<br>fuscata           | Sooty Tern                                      | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Oxyura australis                 | Blue-billed Duck                                | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Pandion cristatus                | Eastern Osprey                                  | Vulnerable                 | Category 3               | Not Listed                     |                                 |
| Animalia | Aves  | Petroica boodang                 | Scarlet Robin                                   | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Petroica<br>phoenicea            | Flame Robin                                     | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Pezoporus<br>wallicus wallicus   | Eastern Ground<br>Parrot                        | Vulnerable                 | Category 3               | Not Listed                     |                                 |
| Animalia | Aves  | Philomachus<br>pugnax            | Ruff  | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves  | Plegadis<br>falcinellus          | Glossy Ibis                                     | Not Listed                 | Not Sensitive            | Not Listed                     | САМВА                           |
| Animalia | Aves  | Pluvialis fulva                  | Pacific Golden<br>Plover                        | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves  | Pluvialis<br>squatarola          | Grey Plover                                     | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves  | Polytelis<br>swainsonii          | Superb Parrot                                   | Vulnerable                 | Category 3               | Vulnerable                     |                                 |
| Animalia | Aves  | Procelsterna cerulea             | Grey Ternlet                                    | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Pterodroma<br>neglecta neglecta  | Kermadec Petrel<br>(west Pacific<br>subspecies) | Vulnerable                 | Not Sensitive            | Vulnerable                     |                                 |
| Animalia | Aves  | Ptilinopus regina                | Rose-crowned<br>Fruit-Dove                      | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Ptilinopus<br>superbus           | Superb Fruit-<br>Dove                           | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Rostratula<br>australis          | Australian<br>Painted Snipe                     | Endangered                 | Not Sensitive            | Endangered                     |                                 |
| Animalia | Aves  | Stagonopleura<br>guttata         | Diamond Firetail                                | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Stercorarius<br>parasiticus      | Arctic Jaeger                                   | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;JAMBA                   |
| Animalia | Aves  | Sterna hirundo                   | Common Tern                                     | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves  | Sternula albifrons               | Little Tern                                     | Endangered                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves  | Stictonetta<br>naevosa           | Freckled Duck                                   | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Aves  | Sula leucogaster                 | Brown Booby                                     | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves  | Thalassarche cauta               | Shy Albatross                                   | Vulnerable                 | Not Sensitive            | Vulnerable                     |                                 |
| Animalia | Aves  | Thalassarche                     | Black-browed<br>Albatross                       | Vulnerable                 | Not Sensitive            | Vulnerable                     |                                 |
| Animalia | Aves  | Tringa brevipes                  | Grey-tailed Tattler                             | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves  | Tringa glareola                  | Wood Sandpiper                                  | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |

| Kingdom  | Class    | Scientific                                  | Common                            | NSW Conservation<br>Status | NSW Sensitivity<br>Class | Federal<br>Conservation Status | Migratory Species<br>Agreements |
|----------|----------|---|-----------------------------------|----------------------------|--------------------------|--------------------------------|---------------------------------|
| Animalia | Aves     | Tringa incana                               | Wandering Tattler                 | Not Listed                 | Not Sensitive            | Not Listed                     | JAMBA                           |
| Animalia | Aves     | Tringa nebularia                            | Common<br>Greenshank              | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves     | Tringa stagnatilis                          | Marsh Sandpiper                   | Not Listed                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Aves     | Tryngites<br>subruficollis                  | Buff-breasted<br>Sandpiper        | Not Listed                 | Not Sensitive            | Not Listed                     | Rokamba;Jamba                   |
| Animalia | Aves     | Tyto<br>novaehollandiae                     | Masked Owl                        | Vulnerable                 | Category 3               | Not Listed                     |                                 |
| Animalia | Aves     | Xenus cinereus                              | Terek Sandpiper                   | Vulnerable                 | Not Sensitive            | Not Listed                     | ROKAMBA;CAMBA;<br>JAMBA         |
| Animalia | Mammalia | Arctocephalus<br>forsteri                   | New Zealand Fur-<br>seal          | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Mammalia | Arctocephalus<br>pusillus doriferus         | Australian Fur-<br>seal           | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Mammalia | Dasyurus<br>viverrinus                      | Eastern Quoll                     | Endangered                 | Not Sensitive            | Endangered                     |                                 |
| Animalia | Mammalia | Dugong dugon                                | Dugong                            | Endangered                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Mammalia | Eubalaena<br>australis                      | Southern Right<br>Whale           | Endangered                 | Not Sensitive            | Endangered                     |                                 |
| Animalia | Mammalia | Megaptera<br>novaeangliae                   | Humpback Whale                    | Vulnerable                 | Not Sensitive            | Vulnerable                     |                                 |
| Animalia | Mammalia | Miniopterus<br>australis                    | Little Bentwing-<br>bat           | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Mammalia | Miniopterus<br>schreibersii<br>oceanensis   | Eastern<br>Bentwing-bat           | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Mammalia | Myotis macropus                             | Southern Myotis                   | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Mammalia | Perameles<br>nasuta                         | Long-nosed<br>Bandicoot           | Endangered<br>Population   | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Mammalia | Phascolarctos<br>cinereus                   | Koala                             | Vulnerable                 | Not Sensitive            | Vulnerable                     |                                 |
| Animalia | Mammalia | Pteropus<br>poliocephalus                   | Grey-headed<br>Flying-fox         | Vulnerable                 | Not Sensitive            | Vulnerable                     |                                 |
| Animalia | Mammalia | Saccolaimus<br>flaviventris                 | Yellow-bellied<br>Sheathtail-bat  | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Mammalia | Scoteanax<br>rueppellii                     | Greater Broad-<br>nosed Bat       | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Animalia | Reptilia | Caretta caretta                             | Loggerhead<br>Turtle              | Endangered                 | Not Sensitive            | Endangered                     |                                 |
| Animalia | Reptilia | Chelonia mydas                              | Green Turtle                      | Vulnerable                 | Not Sensitive            | Vulnerable                     |                                 |
| Animalia | Reptilia | Eretmochelys<br>imbricata                   | Hawksbill Turtle                  | Not Listed                 | Not Sensitive            | Vulnerable                     |                                 |
| Plantae  | Flora    | Acacia bynoeana                             | Bynoe's Wattle                    | Endangered                 | Not Sensitive            | Vulnerable                     |                                 |
| Plantae  | Flora    | Acacia gordonii                             |                                   | Endangered                 | Not Sensitive            | Endangered                     |                                 |
| Plantae  | Flora    | Acacia prominens                            | Gosford Wattle                    | Endangered<br>Population   | Not Sensitive            | Not Listed                     |                                 |
| Plantae  | Flora    | Acacia<br>pubescens                         | Downy Wattle                      | Vulnerable                 | Not Sensitive            | Vulnerable                     |                                 |
| Plantae  | Flora    | Acacia terminalis subsp. terminalis         | Sunshine Wattle                   | Endangered                 | Not Sensitive            | Endangered                     |                                 |
| Plantae  | Flora    | Caladenia<br>tessellata                     | Thick Lip Spider<br>Orchid        | Endangered                 | Category 2               | Vulnerable                     |                                 |
| Plantae  | Flora    | Callistemon<br>linearifolius                | Netted Bottle<br>Brush            | Vulnerable                 | Category 3               | Not Listed                     |                                 |
| Plantae  | Flora    | Dichanthium setosum                         | Bluegrass                         | Vulnerable                 | Not Sensitive            | Vulnerable                     |                                 |
| Plantae  | Flora    | Eucalyptus fracta                           | Broken Back<br>Ironbark           | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Plantae  | Flora    | Eucalyptus<br>leucoxylon subsp.<br>pruinosa | Yellow Gum                        | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Plantae  | Flora    | Eucalyptus<br>nicholii                      | Narrow-leaved<br>Black Peppermint | Vulnerable                 | Not Sensitive            | Vulnerable                     |                                 |

| Kingdom | Class | Scientific                 | Common                    | NSW Conservation<br>Status | NSW Sensitivity<br>Class | Federal<br>Conservation Status | Migratory Species<br>Agreements |
|---------|-------|----------------------------|---------------------------|----------------------------|--------------------------|--------------------------------|---------------------------------|
| Plantae | Flora | Eucalyptus<br>pulverulenta | Silver-leafed Gum         | Vulnerable                 | Not Sensitive            | Vulnerable                     |                                 |
| Plantae | Flora | Eucalyptus<br>scoparia     | Wallangarra<br>White Gum  | Endangered                 | Not Sensitive            | Vulnerable                     |                                 |
| Plantae | Flora | Hibbertia<br>puberula      |                           | Endangered                 | Not Sensitive            | Not Listed                     |                                 |
| Plantae | Flora | Macadamia<br>integrifolia  | Macadamia Nut             | Not Listed                 | Not Sensitive            | Vulnerable                     |                                 |
| Plantae | Flora | Macadamia<br>tetraphylla   | Rough-shelled<br>Bush Nut | Vulnerable                 | Not Sensitive            | Vulnerable                     |                                 |
| Plantae | Flora | Maundia<br>triglochinoides |                           | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Plantae | Flora | Melaleuca deanei           | Deane's<br>Paperbark      | Vulnerable                 | Not Sensitive            | Vulnerable                     |                                 |
| Plantae | Flora | Persoonia hirsuta          | Hairy Geebung             | Endangered                 | Category 3               | Endangered                     |                                 |
| Plantae | Flora | Pomaderris<br>prunifolia   | Plum-leaf<br>Pomaderris   | Endangered<br>Population   | Not Sensitive            | Not Listed                     |                                 |
| Plantae | Flora | Prostanthera marifolia     | Seaforth<br>Mintbush      | Critically<br>Endangered   | Category 3               | Critically Endangered          |                                 |
| Plantae | Flora | Senecio<br>spathulatus     | Coast Groundsel           | Endangered                 | Not Sensitive            | Not Listed                     |                                 |
| Plantae | Flora | Senna acclinis             | Rainforest Cassia         | Endangered                 | Not Sensitive            | Not Listed                     |                                 |
| Plantae | Flora | Syzygium<br>paniculatum    | Magenta Lilly Pilly       | Endangered                 | Not Sensitive            | Vulnerable                     |                                 |
| Plantae | Flora | Tetratheca juncea          | Black-eyed Susan          | Vulnerable                 | Not Sensitive            | Vulnerable                     |                                 |
| Plantae | Flora | Thesium australe           | Austral Toadflax          | Vulnerable                 | Not Sensitive            | Vulnerable                     |                                 |
| Plantae | Flora | Tinospora<br>tinosporoides | Arrow-head Vine           | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |
| Plantae | Flora | Wilsonia<br>backhousei     | Narrow-leafed<br>Wilsonia | Vulnerable                 | Not Sensitive            | Not Listed                     |                                 |

Data does not include NSW category 1 sensitive species.

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Data obtained 01/11/2018

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# APPENDIX



## ANALYTICAL SUMMARY TABLES





|   |         |         |              | BTEX           |            |              |            |         |           | TRH       |         |                           |
|---|---------|---------|--------------|----------------|------------|--------------|------------|---------|-----------|-----------|---------|---------------------------|
|   | Benzene | Toluene | Ethylbenzene | Xylene (m & p) | Xylene (o) | Xylene Total | Total BTEX | C6 - C9 | C10 - C14 | C15 - C28 | C29-C36 | +C10 - C36 (Sum of total) |
|   | mg/kg   | mg/kg   | mg/kg        | mg/kg          | mg/kg      | mg/kg        | mg/kg      | mg/kg   | mg/kg     | mg/kg     | mg/kg   | mg/kg                     |
| NEDM 2012 EIL LID/DOS Jow pH CEC clay content aged 0.2m                     | 0.1     | 0.1     | 0.1          | 0.2            | 0.1        | 0.5          | 0.2        | 20      | 20        | 50        | 50      | 50                        |
| NEPM 2013 EL UR/POS, low pri, CEC, clay content - aged 0-2m                 | 50      | OE      | 70           |                |            | 105          |            |         | 120       |           |         |                           |
| CRCCARE 2011 Soil HSL for Direct Contact. Intrusive Maintenance Worker 0.1m | 1100    | 120,000 | 70<br>85.000 |                |            | 120,000      |            |         | 120       |           |         |                           |
| NEDM 2012 Schedule B1 Table 7 Ashestos HSLs                                 | 1100    | 120,000 | 85,000       |                |            | 150,000      |            |         |           |           |         |                           |
| NEPM 2013 Schedule B1 Table 7 Asbestos H3L3                                 |         |         |              |                |            |              |            |         |           |           |         |                           |
| NEPM 2013 Fnil, Residential A&B, for Vanour Intrusion, Sand                 |         |         |              |                |            |              |            |         |           |           |         |                           |
| 0-1m  | 0.5     | 160     | 55           |                |            | 40           |            |         |           |           |         |                           |
| 1-2m  | 0.5     | 220     | NI           |                |            | 60           |            |         |           |           |         |                           |
| 2-4m  | 0.5     | 310     | NL           |                |            | 95           |            |         |           |           |         |                           |
| >4m   | 0.5     | 540     | NL           |                |            | 170          |            |         |           |           |         |                           |

62 <50 173 <50 <50

| Site | Location | Field ID | Sample Date |       |       |       |      |      |      |   |     |     |     |     |   |
|------|----------|----------|-------------|-------|-------|-------|------|------|------|---|-----|-----|-----|-----|---|
|      |          | TP01_0.2 |             | <0.1  | <0.1  | <0.1  | <0.2 | <0.1 | <0.3 | - | <20 | <20 | <50 | 62  | ſ |
|      |          | TP01_0.9 |             | <0.1  | <0.1  | <0.1  | <0.2 | <0.1 | <0.3 | - | <20 | <20 | <50 | <50 | ĺ |
|      |          | TP02_0.1 |             | <0.1  | <0.1  | <0.1  | <0.2 | <0.1 | <0.3 | - | <20 | <20 | 63  | 110 | ſ |
|      |          | TP02_0.4 |             | <0.1  | <0.1  | <0.1  | <0.2 | <0.1 | <0.3 | - | <20 | <20 | <50 | <50 | ſ |
|      |          | TP03_0.2 | 7           | <0.1  | <0.1  | <0.1  | <0.2 | <0.1 | <0.3 | - | <20 | <20 | <50 | <50 | ſ |
|      |          | TP03 1.2 |             | < 0.1 | < 0.1 | < 0.1 | <0.2 | <0.1 | <0.3 | - | <20 | <20 | <50 | <50 | ſ |

|                         | TF                               | 203_1.2     |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|-------------------------|----------------------------------|-------------|------------|------|------|------|------|------|------|------|-----|-----|------|------|------|
|                         | TP                               | 204_0.1     |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TP                               | 205_0.1     |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TP                               | 205_0.9     |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TP                               | 206_0.1     | 10/11/2010 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | 100  | 480  | 580  |
|                         | TP                               | 206_0.3     | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TP                               | 207_0.1     | F          | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TF                               | <br>207_0.4 |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TF                               | <br>207_0.6 |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TP                               | 208_0.4     | 1          | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TP                               | 209_0.3     |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TP10_0.1                         | <0.1        | <0.1       | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20  | <20  | <50 | 91  | 91   |      |      |
|                         | TP                               | 211_0.2     |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TP                               | 211_1.2     |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | 72   | 92   | 164  |
|                         | TP                               | 212_0.2     |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TP                               | 213_0.1     |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | 70   | 290  | 360  |
|                         | TP                               | 213_0.4     |            | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -    | -    |
|                         | TF                               | 914_0.1     |            | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -    | -    |
| Kyeemagh Infants School | TF                               | 914_0.7     |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TP                               | 215_0.1     |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TP                               | 215_0.6     | 17/11/2019 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TP16_0.1<br>TP16_0.8<br>TP17_0.1 |             |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         |                                  |             |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         |                                  |             |            | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -    | -    |
|                         | TF                               | 217_0.5     |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TF                               | °18_0.1     |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TF                               | 218_0.4     |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TP                               | 919_0.1     | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TP                               | 919_0.3     | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TP                               | 20_0.1      |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | B⊦                               | 102_0.5     | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | BI                               | H2_1.0      | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | B⊦                               | 103_0.5     |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | BI                               | H4_0.4      |            | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | 370  | 1600 | 1970 |
|                         | BHO                              | 5_0.2-0.5   | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TPC                              | D3_ASB1     | 10/11/2018 | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -    | -    |
|                         | TP                               | 204_0.4     |            | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -    | -    |
|                         |                                  | ASB2        | 17/11/2018 | -    | -    | -    | -    | -    | -    | -    | -   | -   | -    | -    | -    |
|                         | TP12_0.2                         | QA100       | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TP12_0.2                         | QA200       | 10/11/2010 | <0.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.2 | <10 | <50 | <100 | <100 | <50  |
|                         | TP16_0.1                         | QA300       | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.3 | -    | <20 | <20 | <50  | <50  | <50  |
|                         | TP16_0.1                         | QA400       | 1//11/2010 | <0.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.2 | <10 | <50 | <100 | <100 | <50  |

#### Statistical Summary

| Maximum Concentration | <0.2  | <0.5  | <0.5  | <0.5  | <0.5  | <0.5  | <0.2 | <20 | <50 | 370 | 1600 | 1970 |
|-----------------------|-------|-------|-------|-------|-------|-------|------|-----|-----|-----|------|------|
| Average Concentration | 0.052 | 0.06  | 0.06  | 0.11  | 0.06  | 0.15  | <0.2 | <20 | <50 | 40  | 88   | 104  |
| Standard Deviation    | 0.011 | 0.044 | 0.044 | 0.033 | 0.044 | 0.022 |      | 1   | 3   | 55  | 256  | 316  |


|   |        |         | CRC Care | TRH Fract | ions                     |                      |                               |           |                        |                        |                  | M              | ٩H              |                    |                  |         |                   |
|---|--------|---------|----------|-----------|--------------------------|----------------------|-------------------------------|-----------|------------------------|------------------------|------------------|----------------|-----------------|--------------------|------------------|---------|-------------------|
|   | C6-C10 | C10-C16 | C16-C34  | C34-C40   | C10 - C40 (Sum of total) | F1: C6-C10 less BTEX | F2: >C10-C16 less Naphthalene | Total MAH | 1,2,4-trimethylbenzene | 1,3,5-trimethylbenzene | Isopropylbenzene | n-butylbenzene | n-propylbenzene | p-isopropyltoluene | sec-butylbenzene | Styrene | tert-butylbenzene |
|   | mg/kg  | mg/kg   | mg/kg    | mg/kg     | mg/kg                    | mg/kg                | mg/kg                         | mg/kg     | mg/kg                  | mg/kg                  | mg/kg            | mg/kg          | mg/kg           | mg/kg              | mg/kg            | mg/kg   | mg/kg             |
| LOR   | 20     | 50      | 100      | 100       | 100                      | 20                   | 50                            | 0.5       | 0.5                    | 0.5                    | 0.5              | 0.5            | 0.5             | 0.5                | 0.5              | 0.5     | 0.5               |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |        |         |          |           |                          |                      |                               |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |        | 120     | 300      | 2800      |                          | 180                  |                               |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m | 82,000 | 62,000  | 85,000   | 120,000   |                          |                      |                               |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |        |         |          |           |                          |                      |                               |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| NEPM 2013 HIL, Residential A  |        |         |          |           |                          |                      |                               |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |        |         |          |           |                          |                      |                               |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| 0-1m  |        |         |          |           |                          | 45                   | 110                           |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| 1-2m  |        |         |          |           |                          | 70                   | 240                           |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| 2-4m  |        |         |          |           |                          | 110                  | 440                           |           |                        |                        |                  |                |                 |                    |                  |         |                   |
| >4m   |        |         |          |           |                          | 200                  | NL                            |           |                        |                        |                  |                |                 |                    |                  |         |                   |

| Site                    | Location | Field ID    | Sample Date  |          |      |      |      |      |     |      |      |       |       |       |      |      |      |      |      |          |
|-------------------------|----------|-------------|--------------|----------|------|------|------|------|-----|------|------|-------|-------|-------|------|------|------|------|------|----------|
|                         | TI       | P01_0.2     |              | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    | -     | -     | -     | -    | -    | -    | -    | -    | -        |
|                         | TI       | P01_0.9     |              | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    | -     | -     | -     | -    | -    | -    | -    | -    | -        |
|                         | TI       | P02_0.1     |              | <20      | <50  | 130  | <100 | 130  | <20 | <50  | -    | -     | -     | -     | -    | -    | -    | -    | -    | -        |
|                         | TI       | P02_0.4     |              | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    | -     | -     | -     | -    | -    | -    | -    | -    | -        |
|                         | TI       | P03_0.2     | 1            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    | -     | -     | -     | -    | -    | -    | -    | -    | -        |
|                         | TI       | <br>P03 1.2 | 1            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | <0.5 | <0.5  | <0.5  | <0.5  | -    | -    | -    | -    | <0.5 | -        |
|                         | TI       | <br>P04 0.1 | 1            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    | -     | -     | -     | -    | _    | -    | -    | -    | -        |
|                         | TI       | <br>P05 0.1 | 1            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    | -     | -     | -     | -    | -    | -    | -    | -    | -        |
|                         | ТІ       | <br>P05 0.9 | 1            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | <0.5 | <0.5  | <0.5  | <0.5  | -    | -    | -    | -    | <0.5 | -        |
|                         | TI       | <br>P06 0.1 | 1            | <20      | <50  | 350  | 520  | 870  | <20 | <50  | -    | -     | -     | -     | -    | -    | -    | -    | -    | -        |
|                         | TI       | <br>P06_0.3 | 10/11/2018   | <20      | <50  | <100 | <100 | <100 | <20 | <50  | <0.5 | <0.5  | <0.5  | <0.5  | -    | -    | -    | -    | <0.5 | -        |
|                         | TI       | <br>P07 0.1 | 1            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    | -     | -     | -     | -    | -    | -    | -    | -    | -        |
|                         | ТІ       | P07 0.4     | 1            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    | -     | -     | -     | -    | -    | -    | -    | -    | -        |
|                         | TI       | P07 0.6     | 1            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    | -     | -     | -     | -    | _    | -    | -    | -    | -        |
|                         | TI       | P08 0.4     | 1            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | <0.5 | <0.5  | <0.5  | <0.5  | -    | _    | -    | -    | <0.5 | -        |
|                         | Т        | P09_0.3     | -            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    | -     | -     | -     | -    | _    | -    | -    | -    | -        |
|                         | Т        | P10_0.1     | -            | <20      | <50  | <100 | 150  | 150  | <20 | <50  | -    | -     | -     | -     | -    | _    | -    |      | -    | -        |
|                         | Т        | P11 0.2     | -            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    | -     | -     | -     | -    | _    | -    |      | -    | -        |
|                         | T        | P11_1.2     | -            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | <0.5 | < 0.5 | < 0.5 | < 0.5 | -    | _    | -    |      | <0.5 | -        |
|                         | T        | P12 0 2     | -            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    | -     | -     | -     | -    | -    | -    |      | -    | -        |
|                         | T        | P13_01      |              | <20      | <50  | 270  | 240  | 510  | <20 | <50  | <0.5 | <0.5  | <0.5  | < 0.5 | -    | _    | -    |      | <0.5 | -        |
|                         | Т        | P13 0 4     | -            | -        | -    |      | -    | -    | -20 |      | -    |       | -     |       |      |      |      |      |      |          |
|                         | Т        | P14_01      | -            | <u> </u> |      | -    |      | _    |     | -    | -    |       |       |       | -    |      |      |      | -    |          |
| Kyeemagh Infants School | Т        | P14_0.1     | -            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | <0.5 | <0.5  | <0.5  | <0.5  |      |      |      |      | <0.5 |          |
| Kyeemägi mänts School   | Т        | P15 0 1     | -            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | <0.5 | <0.5  | -0.5  | <0.5  |      |      |      |      | <0.5 |          |
|                         | ті       | P15_0.1     | -            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | <0.5 | <0.5  | <0.5  | <0.5  |      |      |      |      | <0.5 | <u> </u> |
|                         | T        | P16_0.1     | - 17/11/2018 | <20      | <50  | <100 | <100 | <100 | <20 | <50  | <0.5 | <0.5  | <0.5  | <0.5  |      |      |      |      | <0.5 |          |
|                         | T        | P16 0 8     | -            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | <05  | <0.5  | <0.5  | <05   |      |      |      |      | <05  | -        |
|                         | T        | P10_0.8     | -            | ~20      | < 50 | <100 | <100 | <100 | ~20 | <50  | <0.5 | <0.5  | <0.5  | <0.5  | -    | -    | -    | -    | <0.5 |          |
|                         | T        | P17_0.1     | -            | <20      |      | -100 | <100 | <100 | -20 | - 50 | -05  |       | - 0 5 |       | -    | -    | -    | -    |      |          |
|                         |          | P17_0.3     | -            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | <0.5 | <0.5  | <0.5  | <0.5  | -    | -    | -    | -    | <0.5 |          |
|                         |          | P10_0.1     | -            | <20      | <50  | <100 | <100 | <100 | <20 | <50  |      |       | -     | -     |      | -    | -    | -    | -    |          |
|                         |          | P10_0.4     |              | <20      | <50  | <100 | <100 | <100 | <20 | <50  | <0.5 | <0.5  | <0.5  | <0.5  | -    | -    | -    | -    | <0.5 |          |
|                         |          | P19_0.1     | 10/11/2018   | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    | -     | -     | -     | -    | -    | -    | -    | -    |          |
|                         |          | P19_0.3     |              | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    | -     | -     | -     | -    | -    | -    | -    | -    |          |
|                         |          |             | -            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    |       | -     | -     | -    | -    | -    | -    | -    |          |
|                         |          |             | 17/11/2018   | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    | -     | -     | -     |      | -    | -    | -    | -    |          |
|                         | В        |             | -            | <20      | <50  | <100 | <100 | <100 | <20 | <50  | <0.5 | <0.5  | <0.5  | <0.5  | -    | -    | -    | -    | <0.5 |          |
|                         | Br       |             |              | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    | -     | -     | -     | -    | -    | -    | -    | -    | -        |
|                         | B        |             | -            | <20      | <50  | 1200 | 940  | 2140 | <20 | <50  | -    | -     | -     | -     | -    | -    | -    | -    | -    |          |
|                         | BHU      | 02 0.2-0.5  | 10/11/2018   | <20      | <50  | <100 | <100 | <100 | <20 | <50  | <0.5 | <0.5  | <0.5  | <0.5  | -    | -    | -    | -    | <0.5 |          |
|                         |          | 03_42RT     | -            | -        | -    | -    | -    | -    | -   | -    | -    | -     | -     | -     | -    | -    | -    | -    | -    |          |
|                         |          | ru4_U.4     | 17/11/2010   | -        | -    | -    | -    | -    | -   | -    | -    | -     | -     | -     | -    | -    | -    | -    | -    |          |
|                         | TD42.0.2 | A282        | 1//11/2018   | -        | -    | -    | -    | -    | -   | -    | -    | -     | -     | -     | -    | -    | -    | -    | -    |          |
|                         | TP12_0.2 | QA100       | 10/11/2018   | <20      | <50  | <100 | <100 | <100 | <20 | <50  | <0.5 | <0.5  | <0.5  | <0.5  | -    | -    | -    | -    | <0.5 | -        |
|                         | TP12_0.2 | QA200       |              | <10      | <50  | <100 | <100 | <50  | <10 | <50  | -    | <0.5  | <0.5  | <0.5  | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     |
|                         | TP16_0.1 | QA300       | 17/11/2018   | <20      | <50  | <100 | <100 | <100 | <20 | <50  | -    | -     | -     | -     | -    | -    | -    | -    | -    |          |
|                         | TP16_0.1 | QA400       |              | <10      | <50  | <100 | <100 | <50  | <10 | <50  | -    | -     | -     | -     | -    | -    | -    | -    | -    | -        |

| Maximum Concentration | <20 | <50 | 1200 | 940 | 2140 | <20 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|-----------------------|-----|-----|------|-----|------|-----|-----|------|------|------|------|------|------|------|------|------|------|
| Average Concentration | <20 | <50 | 93   | 90  | 135  | <20 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Standard Deviation    | 1   | 0   | 187  | 158 | 353  | 1   | 0   | 0    | 0    | 0    | 0    |      |      |      |      | 0    |      |



|   |                                |                                    |                        |              |                |            |                   |                |                | P                    | AH                   |          |                       |              |          |                         |               |                     |              |        |
|---|--------------------------------|------------------------------------|------------------------|--------------|----------------|------------|-------------------|----------------|----------------|----------------------|----------------------|----------|-----------------------|--------------|----------|-------------------------|---------------|---------------------|--------------|--------|
|   | Benzo(a)pyrene TEQ (half LOR)_ | Benzo(a)pyrene TEQ (upper bound) * | Benzo(b+j)fluoranthene | Acenaphthene | Acenaphthylene | Anthracene | Benz(a)anthracene | BaP TEQ (zero) | Benzo(a)pyrene | Benzo(g,h,i)perylene | Benzo(k)fluoranthene | Chrysene | Dibenz(a,h)anthracene | Fluoranthene | Fluorene | Indeno(1,2,3-c,d)pyrene | , Naphthalene | PAHs (Sum of total) | Phenanthrene | Pyrene |
|   | mg/kg                          | mg/kg                              | mg/kg                  | mg/kg        | mg/kg          | mg/kg      | mg/kg             | mg/kg          | mg/kg          | mg/kg                | mg/kg                | mg/kg    | mg/kg                 | mg/kg        | mg/kg    | mg/kg                   | mg/kg         | mg/kg               | mg/kg        | mg/kg  |
| LUK   | 0.5                            | 0.5                                | 0.5                    | 0.5          | 0.5            | 0.5        | 0.5               | 0.5            | 0.5            | 0.5                  | 0.5                  | 0.5      | 0.5                   | 0.5          | 0.5      | 0.5                     | 170           | 0.5                 | 0.5          | 0.5    |
| NEPM 2013 EL UR/POS, low pH, CEC, Clay content - aged 0-211                 |                                |                                    |                        |              |                |            |                   |                | 20             |                      |                      |          |                       |              |          |                         | 170           |                     |              |        |
| CPCCAPE 2011 Soil HSL for Direct Contact. Intrusive Maintenance Worker 0-1m |                                |                                    |                        |              |                |            |                   |                | 20             |                      |                      |          |                       |              |          |                         | 20.000        |                     |              |        |
| NEPM 2013 Schedule B1 Table 7 Ashestos HSI s                                |                                |                                    |                        |              |                |            |                   |                |                |                      |                      |          |                       |              |          |                         | 29,000        |                     |              |        |
| NEPM 2013 HIL Residential A   | 3                              |                                    |                        |              |                |            |                   |                |                |                      |                      |          |                       |              |          |                         |               | 300                 |              |        |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |                                |                                    |                        |              |                |            |                   |                |                |                      |                      |          |                       |              |          |                         |               | 300                 |              |        |
| 0-1m  |                                |                                    |                        |              |                |            |                   |                |                |                      |                      |          |                       |              |          |                         | 3             |                     |              |        |
| 1-2m  |                                |                                    |                        |              |                |            |                   |                |                |                      |                      |          |                       |              |          |                         | NI            |                     |              |        |
| 2-4m  |                                |                                    |                        |              |                |            |                   |                |                |                      |                      |          |                       |              |          |                         | NL            |                     |              |        |
| >4m   |                                |                                    |                        |              |                |            |                   |                |                |                      |                      |          |                       |              |          |                         | NL            |                     |              |        |
| Site Location Field ID Sample Date  |                                |                                    |                        |              |                |            |                   |                |                |                      |                      |          |                       |              |          |                         |               |                     |              |        |

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Sample Date TP01\_0.2 TP01\_0.9 TP02\_0.1 TP02\_0.4 TP03\_0.2

<0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 0.6 1.2 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 0.6 1.2 1.2 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 0.6 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 0.6 1.2 0.6 1.2 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 0.6 1.2 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5

|                         | TP       | 203_1.2   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|-------------------------|----------|-----------|------------|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|------|------|
|                         | TF       | 204_0.1   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TF       | 205_0.1   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TF       | °05_0.9   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TP       | 206_0.1   | 10/11/2018 | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TP       | 206_0.3   | 10/11/2018 | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TP       | 207_0.1   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TP       | 207_0.4   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TP       | 207_0.6   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TP       | 208_0.4   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TF       | 209_0.3   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TF       | 210_0.1   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TF       | 211_0.2   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TF       | 211_1.2   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TF       | 212_0.2   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TF       | 213_0.1   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TF       | 213_0.4   |            | -   | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    | -    |
|                         | TF       | 214_0.1   |            | -   | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |          | -    | -    |
| Kyeemagh Infants School | TF       | 214_0.7   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TF       | 215_0.1   |            | 1.2 | 1.5 | <0.5 | <0.5 | <0.5 | <0.5 | 1.1  | 0.9  | 0.7  | <0.5 | 0.7  | 1    | <0.5 | 1.3  | <0.5 | <0.5 | <0.5 | 6.9      | 0.8  | 1.3  |
|                         | TF       | 215_0.6   | 17/11/2019 | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TF       | 216_0.1   | 17/11/2018 | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TF       | 216_0.8   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TF       | 217_0.1   |            | -   | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    | -    |
|                         | TF       | 217_0.5   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TP       | 918_0.1   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TP       | 218_0.4   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TP       | 919_0.1   | 10/11/2018 | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TP       | 219_0.3   | 10/11/2018 | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TP       | 20_0.1    |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | B⊦       | 102_0.5   | 17/11/2018 | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | BI       | H2_1.0    | 17/11/2018 | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | B⊦       | 103_0.5   |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | B        | H4_0.4    |            | 1.3 | 1.7 | 0.6  | <0.5 | <0.5 | <0.5 | <0.5 | 1    | 0.9  | <0.5 | 0.8  | <0.5 | <0.5 | 0.6  | <0.5 | <0.5 | <0.5 | 3.4      | <0.5 | 0.5  |
|                         | BHO      | 5_0.2-0.5 | 10/11/2018 | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TPC      | D3_ASB1   | 10/11/2018 | -   | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -    | -    |
|                         | TP       | 204_0.4   |            | -   | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | <u> </u> | -    | -    |
|                         |          | ASB2      | 17/11/2018 | -   | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | <u> </u> | -    | -    |
|                         | TP12_0.2 | QA100     | 10/11/2018 | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TP12_0.2 | QA200     |            | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TP16_0.1 | QA300     | 17/11/2018 | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |
|                         | TP16_0.1 | QA400     | 1,,11,2010 | 0.6 | 1.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5 | <0.5 |

| Maximum Concentration | 1.3 | 1.7 | 0.6 | <0.5 | <0.5 | <0.5 | 1.1 | 1   | 0.9 | <0.5 | 0.8 | 1   | <0.5 | 1.3 | <0.5 | <0.5 | <0.5 | 6.9 | 0.8 | 1.3 |
|-----------------------|-----|-----|-----|------|------|------|-----|-----|-----|------|-----|-----|------|-----|------|------|------|-----|-----|-----|
| Average Concentration | 0.6 | 1.2 | 0.3 | <0.5 | <0.5 | <0.5 | 0.3 | 0.3 | 0.3 | <0.5 | 0.3 | 0.3 | <0.5 | 0.3 | <0.5 | <0.5 | <0.5 | 0.5 | 0.3 | 0.3 |
| Standard Deviation    | 0.1 | 0.1 | 0.1 | 0    | 0    | 0    | 0.1 | 0.2 | 0.1 | 0    | 0.1 | 0.1 | 0    | 0.2 | 0    | 0    | 0    | 1.1 | 0.1 | 0.2 |



|   | Asb                             | estos                               |                                 |         |         |                   |        | Metals |       |         |        |       |
|---|---------------------------------|-------------------------------------|---------------------------------|---------|---------|-------------------|--------|--------|-------|---------|--------|-------|
|   | Asbestos from ACM in Soil (Y/N) | Asbestos from FA & AF in Soil (Y/N) | Detected (Y) / Not Detected (N) | Arsenic | Cadmium | Chromium (III+VI) | Copper | Iron   | Lead  | Mercury | Nickel | Zinc  |
|   | %w/w                            | %w/w                                | Comment                         | mg/kg   | mg/kg   | mg/kg             | mg/kg  | mg/kg  | mg/kg | mg/kg   | mg/kg  | mg/kg |
| LOR   |                                 |                                     |                                 | 2       | 0.4     | 5                 | 5      | 20     | 5     | 0.1     | 5      | 5     |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |                                 |                                     |                                 | 100     |         | 160               | 60     |        | 1100  |         | 8      | 230   |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |                                 |                                     |                                 |         |         |                   |        |        |       |         |        |       |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m |                                 |                                     |                                 |         |         |                   |        |        |       |         |        |       |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 | 0.01                            | 0.001                               |                                 |         |         |                   |        |        |       |         |        |       |
| NEPM 2013 HIL, Residential A  |                                 |                                     |                                 | 100     | 20      |                   | 6000   |        | 300   | 40      | 400    | 7400  |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |                                 |                                     |                                 |         |         |                   |        |        |       |         |        |       |
| 0-1m  |                                 |                                     |                                 |         |         |                   |        |        |       |         |        |       |
| 1-2m  |                                 |                                     |                                 |         |         |                   |        |        |       |         |        |       |
| 2-4m  |                                 |                                     |                                 |         |         |                   |        |        |       |         |        |       |
| >4m   |                                 |                                     |                                 |         |         |                   |        |        |       |         |        |       |

| Site | Location | Field ID | Sample Date |   |   |   |    |      |     |     |   |     |       |     |    |
|------|----------|----------|-------------|---|---|---|----|------|-----|-----|---|-----|-------|-----|----|
|      |          | TP01_0.2 |             | N | N | N | <2 | <0.4 | 8.8 | 27  | - | 19  | <0.1  | 15  | 44 |
|      |          | TP01_0.9 |             | - | - | - | <2 | <0.4 | <5  | <5  | - | 18  | <0.1  | <5  | 20 |
|      |          | TP02_0.1 |             | N | N | N | <2 | <0.4 | 18  | 9.4 | - | 35  | 0.7   | 15  | 72 |
|      |          | TP02_0.4 |             | Ν | N | N | <2 | <0.4 | 10  | 6.8 | - | 8.1 | <0.1  | 9.6 | 27 |
|      |          | TP03_0.2 |             | N | N | N | <2 | <0.4 | <5  | 6.6 | - | 19  | <0.1  | <5  | 35 |
|      |          | TP03 1.2 |             | N | N | N | <2 | <0.4 | <5  | <5  | - | 6.2 | < 0.1 | <5  | 11 |

|                         | TF       | P04_0.1   | 7            | N      | N | N | <2  | <0.4 | <5  | 8.7 | -    | 38  | <0.1 | <5  | 36  |
|-------------------------|----------|-----------|--------------|--------|---|---|-----|------|-----|-----|------|-----|------|-----|-----|
|                         | TI       | P05_0.1   | 7            | N      | N | N | <2  | <0.4 | <5  | 5.2 | -    | 23  | <0.1 | <5  | 23  |
|                         | ٦T       | P05_0.9   |              | -      | - | - | <2  | <0.4 | <5  | <5  | 360  | <5  | <0.1 | <5  | <5  |
|                         | T        | P06_0.1   | 10/11/2018   | N      | N | N | 2.8 | <0.4 | 130 | 37  | -    | 8.1 | <0.1 | 130 | 86  |
|                         | TF       | 206_0.3   | 10/11/2018   | -      | - | - | <2  | <0.4 | 13  | 16  | -    | 11  | <0.1 | 17  | 26  |
|                         | TF       | P07_0.1   | 7            | N      | N | N | 2.5 | <0.4 | 6.4 | 8.4 | -    | 17  | 1.5  | <5  | 46  |
|                         | TF       | P07_0.4   | ]            | -      | - | - | <2  | <0.4 | <5  | <5  | 1500 | 11  | 0.2  | <5  | 15  |
|                         | TF       | P07_0.6   | 7            | -      | - | - | <2  | <0.4 | <5  | 13  | -    | 9   | 0.7  | <5  | 20  |
|                         | TF       | P08_0.4   | ]            | -      | - | - | <2  | <0.4 | <5  | <5  | -    | 7.3 | <0.1 | <5  | 10  |
|                         | TF       | 209_0.3   | ]            | N      | N | N | <2  | <0.4 | <5  | <5  | -    | 10  | <0.1 | <5  | 14  |
|                         | TF       | P10_0.1   | ]            | -      | - | - | <2  | <0.4 | <5  | <5  | -    | 10  | <0.1 | <5  | 21  |
|                         | TF       | P11_0.2   | ]            | N      | N | N | <2  | <0.4 | <5  | <5  | -    | <5  | <0.1 | <5  | <5  |
|                         | TF       | P11_1.2   | ]            | -      | - | - | <2  | <0.4 | <5  | <5  | -    | 19  | <0.1 | <5  | 12  |
|                         | TF       | P12_0.2   |              | N      | N | N | <2  | <0.4 | <5  | <5  | 630  | 13  | <0.1 | <5  | 17  |
|                         | TF       | P13_0.1   |              | N      | N | N | <2  | <0.4 | 32  | 12  | -    | 11  | <0.1 | 30  | 40  |
|                         | TF       | P13_0.4   |              | N      | N | N | -   | -    | -   | -   | -    | -   | -    | -   | -   |
|                         | TF       | P14_0.1   |              | N      | N | N | -   | -    | -   | -   | -    | -   | -    | -   | -   |
| Kyeemagh Infants School | TF       | P14_0.7   |              | -      | - | - | <2  | <0.4 | <5  | <5  | -    | <5  | <0.1 | <5  | <5  |
|                         | TF       | P15_0.1   |              | -      | - | - | <2  | <0.4 | <5  | 16  | -    | 65  | 0.1  | <5  | 43  |
|                         | TT       | P15_0.6   | 17/11/2018   | -      | - | - | <2  | <0.4 | <5  | <5  | -    | <5  | <0.1 | <5  | 120 |
|                         | TT       | P16_0.1   |              | -      | - | - | <2  | <0.4 | <5  | <5  | -    | 17  | <0.1 | <5  | 18  |
|                         | TT       | P16_0.8   |              | -      | - | - | <2  | <0.4 | <5  | <5  | -    | 5.1 | <0.1 | <5  | 8.3 |
|                         | TT       | P17_0.1   |              | N      | N | N | -   | -    | -   | -   | -    | -   | -    | -   | -   |
|                         | TT       | P17_0.5   |              | -      | - | - | <2  | <0.4 | <5  | <5  | -    | <5  | <0.1 | <5  | <5  |
|                         | TF       | P18_0.1   |              | N      | N | N | <2  | <0.4 | <5  | 11  | -    | 56  | <0.1 | <5  | 130 |
|                         | IT I     | P18_0.4   |              | -      | - | - | <2  | <0.4 | <5  | <5  | -    | <5  | <0.1 | <5  | <5  |
|                         | IT I     | P19_0.1   | 10/11/2018   | N      | N | N | <2  | <0.4 | <5  | 7.3 | -    | 32  | <0.1 | <5  | 29  |
|                         | IT I     | P19_0.3   | 10, 11, 2010 | N      | N | N | <2  | <0.4 | <5  | 10  | -    | 10  | <0.1 | <5  | 25  |
|                         | AT I     | 20_0.1    |              | N      | N | N | <2  | <0.4 | 5.3 | 12  | -    | 42  | <0.1 | <5  | 66  |
|                         | BH       | 402_0.5   | 17/11/2018   | N      | N | N | <2  | <0.4 | <5  | <5  | -    | 9.8 | <0.1 | <5  | 17  |
|                         | В        | H2_1.0    |              | -      | - | - | <2  | <0.4 | <5  | 5.6 | -    | 12  | <0.1 | <5  | 24  |
|                         | BH       | 403_0.5   |              | N      | N | N | <2  | <0.4 | <5  | <5  | -    | 7   | <0.1 | <5  | 6.8 |
|                         | В        | H4_0.4    |              | -      | - | - | <2  | <0.4 | <5  | 11  | -    | 13  | <0.1 | 13  | 25  |
|                         | BHO      | 5_0.2-0.5 | 10/11/2018   | -      | - | - | <2  | <0.4 | <5  | <5  | -    | <5  | <0.1 | <5  | <5  |
|                         | TPO      | 03_ASB1   |              | N      | N | Y | -   | -    | -   | -   | -    | -   | -    | -   | -   |
|                         | AT I     | P04_0.4   |              | 0.1908 | N | Y | -   | -    | -   | -   | -    | -   | -    | -   | -   |
|                         |          | ASB2      | 17/11/2018   | N      | N | Y | -   | -    | -   | -   | -    | -   | -    |     | -   |
|                         | TP12_0.2 | QA100     | 10/11/2018   |        | - | - | <2  | <0.4 | <5  | 11  | -    | 14  | <0.1 | <5  | 15  |
|                         | TP12_0.2 | QA200     |              |        | - | - | <5  | <1   | <2  | <5  | -    | 8   | <0.1 | <2  | 10  |
|                         | TP16_0.1 | QA300     | 17/11/2018   |        | - | - | <2  | <0.4 | <5  | 5.2 | -    | 19  | <0.1 | <5  | 20  |
|                         | TP16_0.1 | QA400     |              | -      | - | - | <5  | <1   | <2  | 5   | -    | 21  | <0.1 | <2  | 22  |

| Maximum Concentration | 0.1908 | 0 | 0 | <5  | <1  | 130 | 37  | 1500 | 65 | 1.5 | 130 | 130 |
|-----------------------|--------|---|---|-----|-----|-----|-----|------|----|-----|-----|-----|
| Average Concentration |        |   |   | <5  | <1  | 7.4 | 7.2 | 830  | 16 | 0.1 | 7.6 | 29  |
| Standard Deviation    |        |   |   | 0.5 | 0.1 | 20  | 7.1 | 596  | 14 | 0.3 | 20  | 29  |



|   |         |          |                                    |          | norganics |            |          |                  |                           | VOCs              |                             | Organic | SVOCs |
|---|---------|----------|------------------------------------|----------|-----------|------------|----------|------------------|---------------------------|-------------------|-----------------------------|---------|-------|
|   | % Clay* | lron (%) | Conductivity (1:5 aqueous extract) | CEC      | pH (Lab)  | pH (Field) | pH (Fox) | Reaction Ratings | cis-1,4-Dichloro-2-butene | Pentachloroethane | trans-1,4-Dichloro-2-butene | TOC     | EPN   |
|   | %       | %        | US/CM                              | meq/100g | pH_Units  | PH UNITS   | pH Unit  | COMMENT          | mg/kg                     | mg/kg             | mg/kg                       | %       | mg/kg |
| LOR   | 1       | 0.01     | 10                                 | 0.05     | 0.1       | 0.1        | 0.1      |                  | 0.5                       | 0.5               | 0.5                         | 0.1     | 0.2   |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| NEPM 2013 HIL, Residential A  |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| 0-1m  |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| 1-2m  |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| 2-4m  |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |
| >4m   |         |          |                                    |          |           |            |          |                  |                           |                   |                             |         |       |

| Site | Location Field | D | Sample Date |   |   |   |   |   |   |   |   |   |   |   |   |      |
|------|----------------|---|-------------|---|---|---|---|---|---|---|---|---|---|---|---|------|
|      | TP01_0.2       | 2 |             | - | - | - | - | - | - | - | - | - | - | - | - | -    |
|      | TP01_0.9       | ) |             | - | - | - | - | - | - | - | - | - | - | - | - | -    |
|      | TP02_0.3       | L |             | - | - | - | - | - | - | - | - | - | - | - | - | <0.2 |
|      | TP02_0.4       | Ļ |             | - | - | - | - | - | - | - | - | - | - | - | - | -    |
|      | TP03_0.2       | 2 |             | - | - | - | - | - | - | - | - | - | - | - | - | <0.2 |
|      | TP03 1.2       | 2 |             | - | - | - | - | - | - | - | - | - | - | - | - | -    |

|                         | TF       | 204 0.1     | 1          | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | <0.2       |
|-------------------------|----------|-------------|------------|------------|------|----|------|-----|---|---|---|------|------|------|-----|------------|
|                         | TF       | 205_0.1     |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | -          |
|                         | TF       | <br>205_0.9 |            | <1         | 0.04 | 12 | 0.76 | 5.9 | - | - | - | -    | -    | -    | 0.1 | -          |
|                         | TF       | <br>206_0.1 |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | -          |
|                         | TF       | <br>206_0.3 | 10/11/2018 | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | -          |
|                         | TF       | <br>207_0.1 | 1          | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | -          |
|                         | TF       | 207_0.4     | 1          | <1         | 0.15 | 58 | 2.8  | 5.8 | - | - | - | -    | -    | -    | 0.6 | -          |
|                         | TF       | 207_0.6     |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | -          |
|                         | TF       | 208_0.4     |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | -          |
|                         | TF       | 209_0.3     |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | -          |
|                         | TF       | 210_0.1     |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | -          |
|                         | TF       | 211_0.2     |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | <0.2       |
|                         | TF       | 211_1.2     |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | -          |
|                         | TF       | 212_0.2     |            | <1         | 0.06 | 31 | 1.9  | 5.9 | - | - | - | -    | -    | -    | 0.7 | <0.2       |
|                         | TF       | 213_0.1     |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | <0.2       |
|                         | TF       | 213_0.4     |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | <u> </u>   |
|                         | TF       | 214_0.1     |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | <u> </u>   |
| Kyeemagh Infants School | TF       | 214_0.7     |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | <u> </u>   |
|                         | TF       | 215_0.1     |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | <u> </u>   |
|                         | TF       | 215_0.6     | 17/11/2018 | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | <0.2       |
|                         | TF       | 216_0.1     |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | <u> </u>   |
|                         | TF       | 216_0.8     |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | <u> </u>   |
|                         | TF       | 217_0.1     |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | <u> </u>   |
|                         | TF       | 217_0.5     |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | <u> </u>   |
|                         | TF       | 218_0.1     |            | <u> </u>   | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | <0.2       |
|                         | TF       | 218_0.4     |            | · ·        | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | <u> </u>   |
|                         | TF       | 219_0.1     | 10/11/2018 | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   |            |
|                         | TF       | 219_0.3     |            | · ·        | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   |            |
|                         |          | 20_0.1      |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | <0.2       |
|                         | BH       | 102_0.5     | 17/11/2018 | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   |            |
|                         | В        | H2_1.0      |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   |            |
|                         | BF       | 103_0.5     |            | <u> </u>   | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   |            |
|                         | В        | H4_0.4      |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   |            |
|                         | BHO      | 5_0.2-0.5   | 10/11/2018 | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   |            |
|                         |          | J3_ASB1     |            | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   |            |
|                         |          | 204_0.4     | 17/11/2010 | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   |            |
|                         |          | ASB2        | 1//11/2018 | <u>  -</u> | -    | -  | -    | -   | - | - | - |      | -    | -    | -   | -          |
|                         | TP12_0.2 | QA100       | 10/11/2018 | ⊢-         | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   | <0.2       |
|                         | TP12_0.2 | QA200       |            | <u>  ·</u> | -    | -  | -    | -   | - | - | - | <0.5 | <0.5 | <0.5 | -   | <u>⊢ -</u> |
|                         | TP16_0.1 | QA300       | 17/11/2018 | ⊢.         | -    | -  | -    | -   | - | - | - |      | -    | -    | -   |            |
| L                       | 1916_0.1 | QA400       | <u> </u>   | -          | -    | -  | -    | -   | - | - | - | -    | -    | -    | -   |            |

| Maximum Concentration | <1 | 0.15 | 58 | 2.8 | 5.9 | 0 | 0 | 0 | <0.5 | <0.5 | <0.5 | 0.7 | <0.2 |
|-----------------------|----|------|----|-----|-----|---|---|---|------|------|------|-----|------|
| Average Concentration | <1 | 0.08 | 34 | 1.8 | 5.9 |   |   |   | <0.5 | <0.5 | <0.5 | 0.5 | <0.2 |
| Standard Deviation    | 0  | 0.06 | 23 | 1   | 0.1 |   |   |   |      |      |      | 0.3 | 0    |



|   |                                       |   |                |                 |                             | Chlori                  | nated Hy              | /drocarb        | oons             |                                       |                                    |               |                  |       |
|---|---------------------------------------|---|----------------|-----------------|-----------------------------|-------------------------|-----------------------|-----------------|------------------|---------------------------------------|------------------------------------|---------------|------------------|-------|
|   | S Vic EPA IWRG 621 CHC (Total)*<br>کم | S Vic EPA IWRG 621 Other CHC (Total)*<br>D Vic EPA IWRG 621 Other CHC (Total) | ලූ<br>කී<br>කී | ଅ<br>ଅଧି<br>ଅଧି | 표 1,1,2,2-tetrachloroethane | g 1,1,2-trichloroethane | ක් 1,1-dichloroethane | ଅ<br>ଅଧି<br>ଅଧି | ක්)<br>ක්/ක<br>ක | ක<br>ක<br>ක<br>1,2,3-trichloropropane | ay/<br>ه/2-dibromo-3-chloropropane | ଅ<br>ଅଧି<br>ଅ | ක්)<br>ක්/ක<br>ක | mg/kg |
| LOR   | 0.5                                   | 0.5   | 0.5            | 0.5             | 0.5                         | 0.5                     | 0.5                   | 0.5             | 0.5              | 0.5                                   | 0.5                                | 0.5           | 0.5              | 0.5   |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |                                       |   |                |                 |                             |                         |                       |                 |                  |                                       |                                    |               |                  |       |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |                                       |   |                |                 |                             |                         |                       |                 |                  |                                       |                                    |               |                  |       |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m |                                       |   |                |                 |                             |                         |                       |                 |                  |                                       |                                    |               |                  |       |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |                                       |   |                |                 |                             |                         |                       |                 |                  |                                       |                                    |               |                  |       |
| NEPM 2013 HIL, Residential A  |                                       |   |                |                 |                             |                         |                       |                 |                  |                                       |                                    |               |                  |       |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |                                       |   |                |                 |                             |                         |                       |                 |                  |                                       |                                    |               |                  |       |
| 0-1m  |                                       |   |                |                 |                             |                         |                       |                 |                  |                                       |                                    |               |                  |       |
| 1-2m  |                                       |   |                |                 |                             |                         |                       |                 |                  |                                       |                                    |               |                  |       |
| 2-4m  |                                       |   |                |                 |                             |                         |                       |                 |                  |                                       |                                    |               |                  |       |
| >4m   |                                       |   |                |                 |                             |                         |                       |                 |                  |                                       |                                    |               |                  |       |

| Site | Location | Field ID | Sample Date |      |      |      |      |      |      |      |      |   |      |   |      |      |      |
|------|----------|----------|-------------|------|------|------|------|------|------|------|------|---|------|---|------|------|------|
|      |          | TP01_0.2 |             | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | - | -    | -    | -    |
|      |          | TP01_0.9 |             | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | - | -    | -    | -    |
|      |          | TP02_0.1 |             | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | - | -    | -    | -    |
|      |          | TP02_0.4 |             | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | - | -    | -    | -    |
|      |          | TP03_0.2 |             | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | - | -    | -    | -    |
|      |          | TP03_1.2 | 7           | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | - | <0.5 | - | <0.5 | <0.5 | <0.5 |

|                         | TF       | 204_0.1   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|-------------------------|----------|-----------|--------------|----------|------|------|------|------|------|------|------|------|------|------|------|----------|----------|
|                         | TF       | 205_0.1   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TF       | 205_0.9   | ]            | <0.5     | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5     |
|                         | TF       | 206_0.1   | 10/11/2018   | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TF       | 206_0.3   | 10/11/2018   | <0.5     | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5     |
|                         | TF       | 207_0.1   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TF       | 207_0.4   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TF       | 207_0.6   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TF       | 208_0.4   |              | <0.5     | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5     |
|                         | TF       | 209_0.3   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TF       | 210_0.1   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TF       | 211_0.2   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TF       | 211_1.2   |              | <0.5     | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5     |
|                         | TF       | 212_0.2   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TF       | 213_0.1   |              | <0.5     | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5     |
|                         | TF       | 213_0.4   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TF       | 914_0.1   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
| Kyeemagh Infants School | TF       | 914_0.7   |              | <0.5     | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5     |
|                         | TF       | 915_0.1   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TF       | 215_0.6   | 17/11/2018   | <0.5     | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5     |
|                         | TF       | 916_0.1   | 17/11/2018   | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TF       | 216_0.8   |              | <0.5     | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5     |
|                         | TF       | 917_0.1   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TF       | 917_0.5   |              | <0.5     | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5     |
|                         | TF       | 918_0.1   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TF       | 218_0.4   |              | <0.5     | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5     |
|                         | TF       | 219_0.1   | 10/11/2018   | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TF       | 219_0.3   | 10/11/2010   | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TF       | 20_0.1    | _            | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | BH       | 102_0.5   | 17/11/2018   | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | В        | H2_1.0    | 17711/2010   | <0.5     | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5     |
|                         | BH       | 103_0.5   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | В        | H4_0.4    |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | BHO      | 5_0.2-0.5 | 10/11/2018   | <0.5     | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5     |
|                         | TPO      | D3_ASB1   | 10, 11, 2010 | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TF       | 204_0.4   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         |          | ASB2      | 17/11/2018   | · ·      | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TP12_0.2 | QA100     | 10/11/2018   | <0.5     | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | -    | <0.5 | <0.5     | <0.5     |
|                         | TP12_0.2 | QA200     | -,,          | · ·      | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | <0.5     |
|                         | TP16_0.1 | QA300     | 17/11/2018   | <u> </u> | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -        | -        |
|                         | TP16_0.1 | QA400     |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | <u> </u> | <u> </u> |

| Maximum Concentration | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Average Concentration | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Standard Deviation    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |      | 0    |      | 0    | 0    | 0    |



| oropane<br>omethane<br>monethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane<br>momethane | aıcnıoropropene<br>vride |
|--|--------------------------|
| 2,2-dichloroj<br>2,2-dichloroj<br>Bromochloro<br>Bromodichlo<br>Chloroform<br>Chlorodibroi<br>Chloroform<br>Chloroform<br>Chlorodibroi<br>Chlorodethan<br>Chlorodethan<br>Chlorodethan<br>Chlorodethan<br>Chlorometh<br>trans-1,2-dichlo   | trans-1,3<br>Vinyl chlc  |
| mg/kg  | ʒ/kg mg/ł                |
| LOR 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5  | ).5 0.5                  |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m  |                          |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6  |                          |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m CRCCARE 2011 Soil HSL for Direct 2011 Soil HSL for Direct 2011 Soil HSL for Direct 2011 Soil HSL for Direct 2011 Soil HSL for Direct 2011 Soil HSL for Direct 2011 Soil HSL for Direct 2011 Soil HSL for Direct 2011 Soil HSL  |                          |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs  |                          |
| NEPM 2013 HIL, Residential A   |                          |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand   |                          |
| 0-1m   |                          |
| 1-2m   |                          |
| 2-4m   |                          |
| >4m  |                          |

| Site | Location | Field ID | Sample Date |   |      |      |      |      |      |      |      |      |      |      |      |      |   |      |      |      |      |      |
|------|----------|----------|-------------|---|------|------|------|------|------|------|------|------|------|------|------|------|---|------|------|------|------|------|
|      |          | TP01_0.2 |             | - | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | -    | -    | -    | -    |
|      |          | TP01_0.9 |             | - | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | -    | -    | -    | -    |
|      |          | TP02_0.1 | ]           | - | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | -    | -    | -    | -    |
|      |          | TP02_0.4 |             | - | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | -    | -    | -    | -    |
|      |          | TP03_0.2 |             | - | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | - | -    | -    | -    | -    | -    |
|      |          | TP03_1.2 | ]           | - | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |

|                         |                |            |      | .010 | .0.0 | .010 | .0.0 | .0.0 | .010 | .0.0 | .010 | .010 | .010 | .0.0 | .0.0 |      | .010 | .010 |      | .010 | 1010 |
|-------------------------|----------------|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                         | TP04_0.1       |            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP05_0.1       |            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP05_0.9       |            | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP06_0.1       | 10/11/2018 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP06_0.3       | 10/11/2018 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP07_0.1       |            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP07_0.4       |            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP07_0.6       |            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP08_0.4       |            | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP09_0.3       |            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP10_0.1       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP11_0.2       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP11_1.2       | 7          | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP12_0.2       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP13_0.1       |            | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP13_0.4       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP14_0.1       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Kyeemagh Infants School | TP14_0.7       | 7          | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP15_0.1       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP15_0.6       | 17/11/2010 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP16_0.1       | 1//11/2018 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP16_0.8       | 7          | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP17_0.1       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP17_0.5       | 7          | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP18_0.1       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP18_0.4       | 7          | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP19_0.1       | 10/11/2010 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP19_0.3       | 10/11/2018 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP20_0.1       |            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | BH02_0.5       | 17/11/2010 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | BH2_1.0        | 1//11/2018 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | BH03_0.5       | 7          | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | BH4_0.4        |            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | BH05_0.2-0.5   | 10/11/2010 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP03_ASB1      | 10/11/2018 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP04_0.4       |            | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | ASB2           | 17/11/2018 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP12_0.2 QA100 | 10/11/2010 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|                         | TP12_0.2 QA200 | 10/11/2018 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <5   | <0.5 | <5   | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5   |
|                         | TP16_0.1 QA300 | 17/11/2010 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         | TP16_0.1 QA400 | 1//11/2018 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
|                         |                |            |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

| Maximum Concentration | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | <0.5 | <5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 |
|-----------------------|------|------|------|------|------|------|----|------|----|------|------|------|------|------|------|------|------|------|----|
| Average Concentration | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | <0.5 | <5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 |
| Standard Deviation    |      | 0    | 0    | 0    | 0    | 0    | 1  | 0    | 1  | 0    | 0    | 0    | 0    |      | 0    | 0    | 0    | 0    | 1  |



|   |                        |                        |                   |                     |                     | Halog               | enated          | Hydroca         | rbons        |              |               |                         |             |                        |
|---|------------------------|------------------------|-------------------|---------------------|---------------------|---------------------|-----------------|-----------------|--------------|--------------|---------------|-------------------------|-------------|------------------------|
|   | 1,2,3-trichlorobenzene | 1,2,4-trichlorobenzene | 1,2-dibromoethane | 1,2-dichlorobenzene | 1,3-dichlorobenzene | 1,4-dichlorobenzene | 2-chlorotoluene | 4-chlorotoluene | Bromobenzene | Bromomethane | Chlorobenzene | Dichlorodifluoromethane | lodomethane | Trichlorofluoromethane |
| LOR   | 0.5                    | 0.5                    | 0.5               | 0.5                 | 0.5                 | 0.5                 | 0.5             | 0.5             | 0.5          | 0.5          | 0.5           | 0.5                     | 0.5         | 0.5                    |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| NEPM 2013 ESL UR/POS. Coarse Soil 0-2m / CCME 2010 SQGs                     |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| NEPM 2013 HIL, Residential A  |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| 0-1m  |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| 1-2m  |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| 2-4m  |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |
| >4m   |                        |                        |                   |                     |                     |                     |                 |                 |              |              |               |                         |             |                        |

| Site | Location | Field ID | Sample Date |   |   |      |      |      |      |   |      |      |      |      |      |      |      |
|------|----------|----------|-------------|---|---|------|------|------|------|---|------|------|------|------|------|------|------|
|      |          | TP01_0.2 |             | - | - | -    | -    | -    | -    | - | -    | -    | -    | -    | -    | -    | -    |
|      |          | TP01_0.9 |             | - | - | -    | -    | -    | -    | - | -    | -    | -    | -    | -    | -    | -    |
|      |          | TP02_0.1 |             | - | - | -    | -    | -    | -    | - | -    | -    | -    | -    | -    | -    | -    |
|      |          | TP02_0.4 |             | - | - | -    | -    | -    | -    | - | -    | -    | -    | -    | -    | -    | -    |
|      |          | TP03_0.2 |             | - | - | -    | -    | -    | -    | - | -    | -    | -    | -    | -    | -    | -    |
|      |          | TP03_1.2 |             | - | - | <0.5 | <0.5 | <0.5 | <0.5 | - | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
|      |          |          |             |   |   |      |      |      |      |   |      |      |      |      |      |      |      |

|                         | TF       | 04_0.1    |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
|-------------------------|----------|-----------|--------------|----------|------|------|------|------|------|------|------|------|------|------|------|--------------|----------|
|                         | TF       | 205_0.1   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
|                         | TF       | 05_0.9    |              | -        | -    | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5         | <0.5     |
|                         | TF       | 206_0.1   | 10/11/2018   | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
|                         | TF       | 206_0.3   | 10/11/2018   | -        | -    | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5         | <0.5     |
|                         | TF       | 07_0.1    |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
|                         | TF       | 07_0.4    |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
|                         | TF       | 207_0.6   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
|                         | TF       | 08_0.4    |              | -        | -    | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5         | <0.5     |
|                         | TF       | 09_0.3    |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
|                         | TF       | 210_0.1   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
|                         | TF       | 211_0.2   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
|                         | TF       | 211_1.2   |              | -        | -    | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5         | <0.5     |
|                         | TF       | 212_0.2   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
|                         | TF       | 213_0.1   |              | -        | -    | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5         | <0.5     |
|                         | TF       | 213_0.4   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
|                         | TF       | 214_0.1   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
| Kyeemagh Infants School | TF       | 214_0.7   |              | -        | -    | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5         | <0.5     |
|                         | TF       | 215_0.1   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
|                         | TF       | 215_0.6   | 17/11/2018   | -        | -    | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5         | <0.5     |
|                         | TF       | 216_0.1   | 17711,2010   | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
|                         | TF       | 216_0.8   |              | -        | -    | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5         | <0.5     |
|                         | TF       | 217_0.1   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
|                         | TF       | 217_0.5   |              | -        | -    | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5         | <0.5     |
|                         | TF       | 218_0.1   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
|                         | TF       | 218_0.4   |              | -        | -    | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5         | <0.5     |
|                         | TF       | 219_0.1   | 10/11/2018   | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
|                         | TF       | 219_0.3   | 10, 11, 2010 | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            |          |
|                         | TF       | 20_0.1    |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            |          |
|                         | BH       | 102_0.5   | 17/11/2018   | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            |          |
|                         | В        | H2_1.0    |              | -        | -    | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5         | <0.5     |
|                         | BH       | 103_0.5   |              | <u> </u> | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            |          |
|                         | В        | H4_0.4    |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | <u> </u> |
|                         | ВНО      | 5_0.2-0.5 | 10/11/2018   | -        | -    | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5         | <0.5     |
|                         | TP       | )3_ASB1   | ,,,          | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            |          |
|                         | TF       | 204_0.4   |              | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |              |          |
|                         |          | ASB2      | 17/11/2018   | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | -        |
|                         | TP12_0.2 | QA100     | 10/11/2018   | -        | -    | <0.5 | <0.5 | <0.5 | <0.5 | -    | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5         | <0.5     |
|                         | TP12_0.2 | QA200     | . ,          | <0.5     | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5   | <0.5 | <5   | <0.5         | <5       |
|                         | TP16_0.1 | QA300     | 17/11/2018   | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | <u>⊢ -  </u> |          |
|                         | TP16_0.1 | QA400     | • • -        | -        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -            | <u> </u> |

| Maximum Concentration | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | <0.5 | <5 | <0.5 | <5 |
|-----------------------|------|------|------|------|------|------|------|------|------|----|------|----|------|----|
| Average Concentration | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | <0.5 | <5 | <0.5 | <5 |
| Standard Deviation    |      |      | 0    | 0    | 0    | 0    |      | 0    | 0    | 1  | 0    | 1  | 0    | 1  |



|   |                               |                                     |         |       |        | Organ             | ochlorin | e Pestic  | ides            |                   |       |       |       |             |
|---|-------------------------------|-------------------------------------|---------|-------|--------|-------------------|----------|-----------|-----------------|-------------------|-------|-------|-------|-------------|
|   | Vic EPA IWRG 621 OCP (Total)* | Vic EPA IWRG 621 Other OCP (Total)* | 4,4-DDE | a-BHC | Aldrin | Aldrin + Dieldrin | b-BHC    | Chlordane | Chlordane (cis) | Chlordane (trans) | d-BHC | DDD   | DDT   | DDT+DDE+DDD |
|   | MG/KG                         | MG/KG                               | mg/kg   | mg/kg | mg/kg  | mg/kg             | mg/kg    | mg/kg     | mg/kg           | mg/kg             | mg/kg | mg/kg | mg/kg | mg/kg       |
|   | 0.1                           | 0.1                                 | 0.05    | 0.05  | 0.05   | 0.05              | 0.05     | 0.1       | 0.05            | 0.05              | 0.05  | 0.05  | 0.05  | 0.05        |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       | 180   |             |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       |       |             |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       |       |             |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       |       |             |
| NEPM 2013 HIL, Residential A  |                               |                                     |         |       |        | 6                 |          | 50        |                 |                   |       |       |       | 240         |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       |       |             |
| 0-1m  |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       |       |             |
| 1-2m  |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       |       |             |
| 2-4m  |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       |       |             |
| >4m   |                               |                                     |         |       |        |                   |          |           |                 |                   |       |       |       |             |

| Site                    | Location | Field ID   | Sample Date |      |      |       |       |       |       |       |       |       |       |       |       |       |       |
|-------------------------|----------|------------|-------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                         | Т        | P01_0.2    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P01_0.9    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P02_0.1    |             | 1.46 | 0.7  | 0.06  | <0.05 | <0.05 | 0.64  | <0.05 | 0.7   | -     | -     | <0.05 | <0.05 | 0.06  | 0.12  |
|                         | Т        | P02_0.4    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P03_0.2    |             | <0.1 | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05 | <0.05 |
|                         | Т        | P03_1.2    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P04_0.1    |             | <0.1 | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05 | <0.05 |
|                         | Т        | P05_0.1    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P05_0.9    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P06_0.1    | 10/11/2018  | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P06_0.3    | 10/11/2018  | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P07_0.1    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P07_0.4    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P07_0.6    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P08_0.4    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P09_0.3    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P10_0.1    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P11_0.2    |             | <0.1 | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05 | <0.05 |
|                         | Т        | P11_1.2    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P12_0.2    |             | <0.1 | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05 | <0.05 |
|                         | Т        | P13_0.1    |             | <0.1 | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05 | <0.05 |
|                         | Т        | P13_0.4    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P14_0.1    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| Kyeemagh Infants School | Т        | P14_0.7    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P15_0.1    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P15_0.6    | 17/11/2019  | <0.1 | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05 | <0.05 |
|                         | Т        | P16_0.1    | 17/11/2018  | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P16_0.8    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P17_0.1    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P17_0.5    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P18_0.1    |             | <0.1 | <0.1 | <0.05 | <0.05 | <0.05 | 0.05  | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05 | <0.05 |
|                         | Т        | P18_0.4    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P19_0.1    | 10/11/2018  | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P19_0.3    | 10/11/2018  | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P20_0.1    |             | <0.1 | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05 | <0.05 |
|                         | В        | H02_0.5    | 17/11/2018  | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | E        | 3H2_1.0    | 1//11/2018  | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | В        | H03_0.5    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | E        | 3H4_0.4    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | BH       | 05_0.2-0.5 | 10/11/2018  | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | TF       | 203_ASB1   | 10/11/2018  | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | Т        | P04_0.4    |             | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         |          | ASB2       | 17/11/2018  | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | TP12_0.2 | QA100      | 10/11/2018  | <0.1 | <0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.1  | -     | -     | <0.05 | <0.05 | <0.05 | <0.05 |
|                         | TP12_0.2 | QA200      | 10/11/2010  | -    | -    | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.2  | <0.05 |
|                         | TP16_0.1 | QA300      | 17/11/2018  | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
|                         | TP16_0.1 | QA400      | 1//11/2010  | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |

| Maximum Concentration | 1.5 | 0.7 | 0.06 | <0.05 | <0.05 | 0.64 | <0.05 | 0.7 | <0.05 | <0.05 | <0.05 | <0.05 | <0.2 | 0.12 |
|-----------------------|-----|-----|------|-------|-------|------|-------|-----|-------|-------|-------|-------|------|------|
| Average Concentration | 0.2 | 0.1 | 0.03 | <0.05 | <0.05 | 0.08 | <0.05 | 0.1 | <0.05 | <0.05 | <0.05 | <0.05 | <0.2 | 0.03 |
| Standard Deviation    | 0.5 | 0.2 | 0.01 | 0     | 0     | 0.18 | 0     | 0.2 |       |       | 0     | 0     | 0    | 0.03 |



|   |          |            |              |               |                     | Orga   | nochlori        | ne Pesti      | cides           |            |                    |                   |              |           |
|---|----------|------------|--------------|---------------|---------------------|--------|-----------------|---------------|-----------------|------------|--------------------|-------------------|--------------|-----------|
|   | Dieldrin | Endosulfan | Endosulfan I | Endosulfan II | Endosulfan sulphate | Endrin | Endrin aldehyde | Endrin ketone | g-BHC (Lindane) | Heptachlor | Heptachlor epoxide | Hexachlorobenzene | Methoxychlor | Toxaphene |
|   | mg/kg    | mg/kg      | mg/kg        | mg/kg         | mg/kg               | mg/kg  | mg/kg           | mg/kg         | mg/kg           | mg/kg      | mg/kg              | mg/kg             | mg/kg        | mg/kg     |
| LOR   | 0.05     | 0.05       | 0.05         | 0.05          | 0.05                | 0.05   | 0.05            | 0.05          | 0.05            | 0.05       | 0.05               | 0.05              | 0.05         | 1         |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |
| NEPM 2013 HIL, Residential A  |          | 270        |              |               |                     | 10     |                 |               |                 | 6          |                    | 10                | 300          | 20        |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |
| 0-1m  |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |
| 1-2m  |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |
| 2-4m  |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |
| >4m   |          |            |              |               |                     |        |                 |               |                 |            |                    |                   |              |           |

| Site                    | Location | Field ID       | Sample Date  |          |       |       |       |       |       |       |       |        |        |        |        |       |    |
|-------------------------|----------|----------------|--------------|----------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|-------|----|
|                         | Т        | P01_0.2        |              | -        | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         | Т        | P01_0.9        |              | -        | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         | Т        | P02_0.1        |              | 0.64     | -     | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05  | <0.05  | <0.05  | <0.05  | <0.05 | <1 |
|                         | Т        | P02_0.4        | -            | -        | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         | Т        | <br>P03 0.2    | -            | < 0.05   | -     | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05  | <0.05  | < 0.05 | <0.05  | <0.05 | <1 |
|                         | Т        | <br>P03 1.2    | -            | -        | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         | Т        | <br>P04_0.1    | -            | < 0.05   | -     | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05  | <0.05  | <0.05  | <0.05  | <0.05 | <1 |
|                         | Т        | <br>P05 0.1    | -            | -        | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         | Т        | P05 0.9        | -            | -        | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         | Т        | P06 0.1        | 1            | · ·      | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         | Т        | P06_0.3        | - 10/11/2018 | -        | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         | T        | P07_0.1        | -            | -        | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         | T        | P07_04         | -            | -        | -     | _     | -     | -     | -     | -     | -     | -      | -      | _      | -      | _     | -  |
|                         | T        | P07_06         | -            | <u> </u> | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | _     | -  |
|                         | T        | P08_0_4        | -            | <u> </u> | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         | T        | P09_03         | -            | <u> </u> | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         | T        | P10_01         | -            | <u> </u> | -     | -     | -     | -     | -     | -     | -     |        |        | -      |        | -     |    |
|                         | T        | P11 0 2        | -            | <0.05    |       | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05  | <0.05  | <0.05  | <0.05  | <0.05 | <1 |
|                         | T        | P11_0.2        | -            | -        | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         | T        | P12 0 2        | -            | <0.05    |       | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05  | <0.05  | <0.05  | <0.05  | <0.05 | <1 |
|                         | T        | P13 0 1        |              | <0.05    |       | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05  | <0.05  | <0.05  | <0.05  | <0.05 |    |
|                         | T        | P13_0.1        | -            | <0.05    |       | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05  | <0.05  | <0.05  | <0.05  | <0.05 |    |
|                         | T        | P13_0.4        | -            |          | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      |        | -     |    |
| Kyeemagh Infants School | T        | P14_0.1        | -            |          |       |       | _     | _     |       |       |       |        |        | _      |        |       |    |
| Kyeemagn mants school   | T        | P14_0.7        | -            |          | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     |    |
|                         | T        | P15_0.1        | -            | <0.05    | -     | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |        |        | <0.05  |        | <0.05 |    |
|                         | т<br>Т   | P15_0.0        | - 17/11/2018 | <0.03    | -     | <0.05 | <0.03 | <0.03 | <0.03 | <0.05 | <0.05 | <0.03  | <0.03  | <0.03  | <0.03  | <0.05 | ~1 |
|                         | т<br>Т   | P10_0.1        | -            |          | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     |    |
|                         |          | P10_0.8        | -            | <u> </u> | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     |    |
|                         |          | P17_0.1        | -            | <u> </u> |       | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     |    |
|                         |          | P17_0.5        | -            |          | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | 1  |
|                         |          | P18_0.1        | -            | 0.05     | -     | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05  | <0.05  | <0.05  | <0.05  | <0.05 | ~1 |
|                         |          | P10_0.4        |              | <u> </u> | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     |    |
|                         |          | P19_0.1        | - 10/11/2018 |          | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     |    |
|                         |          | P19_0.3        |              | -        | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     |    |
|                         |          | P20_0.1        | -            | <0.05    | -     | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05  | <0.05  | <0.05  | <0.05  | <0.05 | <1 |
|                         | В        | HU2_U.5        | - 17/11/2018 | <u> </u> | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     |    |
|                         |          | H2_1.0         | -            | <u> </u> | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     |    |
|                         | В        |                |              | -        | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     |    |
|                         | E        | 0.4<br>0.2 0 5 | -            | <u> </u> | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         | BHU      | J5_U.2-U.5     | 10/11/2018   | -        | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         |          | 03_ASB1        | -            | <u> </u> | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         | I        | P04_0.4        | 17/11/2010   | -        | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         |          | A2R5           | 1//11/2018   | -        | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         | TP12_0.2 | QA100          | 10/11/2018   | < 0.05   | -     | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05  | <0.05  | < 0.05 | <0.05  | <0.05 | <1 |
|                         | TP12_0.2 | QA200          |              | <0.05    | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | <0.2  | -  |
|                         | IP16_0.1 | QA300          | 17/11/2018   | <u> </u> | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |
|                         | TP16_0.1 | QA400          |              | -        | -     | -     | -     | -     | -     | -     | -     | -      | -      | -      | -      | -     | -  |

| Maximum Concentration | 0.64 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.2 | <1 |
|-----------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|----|
| Average Concentration | 0.08 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.2 | <1 |
| Standard Deviation    | 0.18 |       | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0    | 0  |



Б

|   |           |                  |                     |                 |                 |                 | Org          | ganopho             | sphorou   | s Pestici | des       |          |            |            |            |        |          |
|---|-----------|------------------|---------------------|-----------------|-----------------|-----------------|--------------|---------------------|-----------|-----------|-----------|----------|------------|------------|------------|--------|----------|
|   | Tokuthion | Azinophos methyl | Bolstar (Sulprofos) | Bromophos-ethyl | Carbophenothion | Chlorfenvinphos | Chlorpyrifos | Chlorpyrifos-methyl | Coumaphos | Demeton-O | Demeton-S | Diazinon | Dichlorvos | Dimethoate | Disulfoton | Ethion | Ethoprop |
|   | mg/kg     | mg/kg            | mg/kg               | mg/kg           | mg/kg           | mg/kg           | mg/kg        | mg/kg               | mg/kg     | mg/kg     | mg/kg     | mg/kg    | mg/kg      | mg/kg      | mg/kg      | mg/kg  | mg/kg    |
| OR  | 0.2       | 0.2              | 0.2                 | 0.05            | 0.05            | 0.2             | 0.2          | 0.2                 | 2         | 0.2       | 0.2       | 0.2      | 0.2        | 0.2        | 0.2        | 0.2    | 0.2      |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |           |                  |                     |                 |                 |                 |              |                     |           |           |           |          |            |            |            |        |          |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |           |                  |                     |                 |                 |                 |              |                     |           |           |           |          |            |            |            |        |          |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m |           |                  |                     |                 |                 |                 |              |                     |           |           |           |          |            |            |            |        |          |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |           |                  |                     |                 |                 |                 |              |                     |           |           |           |          |            |            |            |        |          |
| NEPM 2013 HIL, Residential A  |           |                  |                     |                 |                 |                 | 160          |                     |           |           |           |          |            |            |            |        |          |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |           |                  |                     |                 |                 |                 |              |                     |           |           |           |          |            |            |            |        |          |
| 0-1m  |           |                  |                     |                 |                 |                 |              |                     |           |           |           |          |            |            |            |        |          |
| 1-2m  |           |                  |                     |                 |                 |                 |              |                     |           |           |           |          |            |            |            |        |          |
| 2-4m  |           |                  |                     |                 |                 |                 |              |                     |           |           |           |          |            |            |            |        |          |
| >4m   |           |                  |                     |                 |                 |                 |              |                     |           |           |           |          |            |            |            |        |          |

| Image: Note of the set of t                                    | Site                    | Location | Field ID            | Sample Date |             |             |          |       |       |             |             |             |    |             |             |             |             |             |             |              |             |
|--|-------------------------|----------|---------------------|-------------|-------------|-------------|----------|-------|-------|-------------|-------------|-------------|----|-------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|
| Image: Note of the state of                                    |                         | TF       | 201_0.2             |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | - 1         | -            | -           |
| Implicit   |                         | TF       | 201 0.9             | 1           | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | -           | -            | -           |
| Impo 144   |                         | TF       |                     | 1           | <0.2        | <0.2        | <0.2     | -     | -     | <0.2        | <0.2        | <0.2        | <2 | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2         | <0.2        |
| Image: Proj 0 2 in the stand of the sta                                     |                         | TF       | 202 0.4             | ·           | -           | -           | -        | -     | -     | -           | -           | -           |    | -           | -           | -           | -           | -           | -           | -            | -           |
| Implicit          |                         |          | 203 0 2             |             | <0.2        | <0.2        | <0.2     | _     | _     | <0.2        | <0.2        | <0.2        | <2 | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2         | <0.2        |
| Image: Probate<br>Image: Pr  |                         | ТЕ       | 203 1 2             |             | -           | -           | -        | _     | _     | -           | -           | -           | -  | -           | -           | -           | -           | -           | -           |              | -           |
| Image: Prime integraImage: Prime integraPrime integr  |                         | Т        | 00_1.2              |             | <0.2        | <0.2        | <0.2     | _     | _     | <0.2        | <0.2        | <0.2        | -2 | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2         | <0.2        |
| Image: Image                                     |                         |          | 04_0.1              |             | <u>\0.2</u> | <b>NO.2</b> | <u> </u> |       | -     | <b>NO.2</b> | <b>NO.2</b> | <b>\0.2</b> | ~2 | <b>NO.2</b> | <b>\0.2</b> | <b>\0.2</b> | <b>N0.2</b> | <b>NO.2</b> | <u> </u>    | <u>\0.2</u>  | <b>NO.2</b> |
| Image:   |                         |          | 05_0.1              |             |             | -           | -        |       | -     | -           |             | -           |    | -           | -           | -           | -           | -           |             |              | <u> </u>    |
| Image: image:                                    |                         |          | <sup>2</sup> 05_0.9 |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           |             |              | -           |
| Image: Note:                                     |                         |          | 206_0.1             | 10/11/2018  | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           |             |              | -           |
| Image:                                    |                         | 11       | 206_0.3             |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | <u>_</u>    |              | -           |
| Import           |                         |          | 207_0.1             |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | <u>_</u>    |              | -           |
| Image:   |                         |          | 207_0.4             |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | <u>_</u>    |              | -           |
| Image:   |                         | TF       | 207_0.6             |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           |             | -            | -           |
| Image: Final stateImage: Final stateImag   |                         | TF       | 208_0.4             |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           |             |              | -           |
| Image: Image                                     |                         | TF       | 209_0.3             |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | -           | -            | -           |
| <table-container>Image: Image: /table-container> |                         | TF       | 210_0.1             |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | -           | -            | -           |
| Image: Fig: 1.2         Image: Fi  |                         | TF       | 211_0.2             |             | <0.2        | <0.2        | <0.2     | -     | -     | <0.2        | <0.2        | <0.2        | <2 | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2         | <0.2        |
| Image: Fig: A         matrix         matrix <th< td=""><td></td><td>TF</td><td>911_1.2</td><td></td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></th<>  |                         | TF       | 911_1.2             |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | -           | -            | -           |
| Implie           |                         | TF       | 212 0.2             | 1           | <0.2        | <0.2        | <0.2     | -     | -     | <0.2        | <0.2        | <0.2        | <2 | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2         | <0.2        |
| Implies     Implies <td></td> <td>TF</td> <td></td> <td></td> <td>&lt;0.2</td> <td>&lt;0.2</td> <td>&lt;0.2</td> <td>-</td> <td>-</td> <td>&lt;0.2</td> <td>&lt;0.2</td> <td>&lt;0.2</td> <td>&lt;2</td> <td>&lt;0.2</td> <td>&lt;0.2</td> <td>&lt;0.2</td> <td>&lt;0.2</td> <td>&lt;0.2</td> <td>&lt;0.2</td> <td>&lt;0.2</td> <td>&lt;0.2</td>   |                         | TF       |                     |             | <0.2        | <0.2        | <0.2     | -     | -     | <0.2        | <0.2        | <0.2        | <2 | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2         | <0.2        |
| TPI            |                         | TF       |                     |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | -           | -            | -           |
| TP14_0.7         TP14_0.7         TP15_0.1         TP16_0.1         TP17_0.5         TP16_0.1  |                         | TF       | P14 0.1             | ·           | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | -           | -            | -           |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$  | Kyeemagh Infants School | TF       | 21 <u>4</u> 0.7     |             | -           | _           | _        | -     | -     | -           | -           | -           | _  | -           | -           | -           | -           | -           | -           | -            | -           |
| Implibule         <  |                         |          | 21_01               |             | -           | _           | _        | _     | -     | _           | _           | _           | _  | -           | -           | -           | -           | _           | /           |              | -           |
| Int b = 0.0         17/1/2018         0.0  |                         | Т        | 215_0.6             |             | <0.2        | <0.2        | <0.2     |       |       | <0.2        | <0.2        | <0.2        | <2 | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2         | <0.2        |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$  |                         |          | 15_0.0<br>216_0.1   | 17/11/2018  | <b>\U.2</b> | <b>\0.2</b> | <0.2     |       | _     | <b>\0.2</b> | <b>\U.2</b> | <b>\0.2</b> | ~2 | <b>\0.2</b> | <0.2        | <0.2        | <b>\0.2</b> | <b>\0.2</b> | <b>\0.2</b> | <b>\U.2</b>  | <b>\U.2</b> |
| $ \begin{array}{ c c c c c } \hline  c c c c c c c c c c c c c c c c c c $   |                         |          | 16_0.1              |             |             | _           |          |       | _     | _           |             | _           |    | _           | _           |             | -           |             |             |              |             |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$  |                         |          | 10_0.8              |             |             | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           |             |              | <u> </u>    |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$  |                         |          | <sup>17_0.1</sup>   |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           |             |              | -           |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$  |                         |          | /17_0.5             |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | -           | -            | -           |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$  |                         |          | /18_0.1             |             | <0.2        | <0.2        | <0.2     | -     | -     | <0.2        | <0.2        | <0.2        | <2 | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2         | <0.2        |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$  |                         |          | 218_0.4             |             |             | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | <u>_</u>    | _ <u>-</u>   | -           |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$  |                         | TF       | 219_0.1             | 10/11/2018  | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | <u>_</u>    | _ <u>-</u> _ | -           |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$  |                         |          | 219_0.3             |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | <u>_</u>    |              | -           |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$  |                         | TF       | 20_0.1              |             | <0.2        | <0.2        | <0.2     | -     | -     | <0.2        | <0.2        | <0.2        | <2 | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2         | <0.2        |
| BH2_1.0         BH2_1.0         I         <  |                         | BH       | 102_0.5             | 17/11/2018  | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | -           | -            | -           |
| $ \begin{split} \  \  \  \  \  \  \  \  \  \  \  \  \  \  \  \  \  \  $  |                         | В        | H2_1.0              |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           |             |              | -           |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$  |                         | BF       | 103_0.5             |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | -           |              | -           |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$  |                         | В        | H4_0.4              |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | -           |              | -           |
| TPU3_ASB1       IO/II/2018       I   |                         | BHO      | 5_0.2-0.5           | 10/11/2019  | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | -           | -            | -           |
| TP1_0.4       I <thi< th="">       I<!--</td--><td></td><td>TPC</td><td>03_ASB1</td><td>10/11/2018</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-  </td><td>-  </td><td>-</td></thi<>   |                         | TPC      | 03_ASB1             | 10/11/2018  | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | -           | -            | -           |
| MASE       17/11/2018       -       <  |                         | TF       | 204_0.4             |             | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | -           | - 1          | -           |
| TP12_0.2       QA100       10/11/2018       <0.2       <0.2       <0.2       -       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2       <0.2 <td></td> <td></td> <td>ASB2</td> <td>17/11/2018</td> <td>-</td> <td>- 1</td> <td>- 1</td> <td>-</td>  |                         |          | ASB2                | 17/11/2018  | -           | -           | -        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           | - 1         | - 1          | -           |
| TP12_0.2 QA200 - <0.05 - <0.05 - <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 - <0.05 <0.05 <0.05 - <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <0.05 <                       |                         | TP12_0.2 | QA100               | 40/44/0010  | <0.2        | <0.2        | <0.2     | -     | -     | <0.2        | <0.2        | <0.2        | <2 | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2        | <0.2         | <0.2        |
|  |                         |          | QA200               | 10/11/2018  | -           | <0.05       | -        | <0.05 | <0.05 | <0.05       | <0.05       | <0.05       | -  | -           | -           | <0.05       | <0.05       | <0.05       | -           | <0.05        | -           |
| TP16 0.1 QA300   |                         | TP16 0.1 | QA300               |             | -           | -           | -        | -     | -     | -           | -           | -           | _  | -           | -           | -           | -           | -           | -           |              | -           |
| TP16 0.1 QA400 17/11/2018  |                         | TP16 0.1 | QA400               | 17/11/2018  | -           | -           | _        | -     | -     | -           | -           | -           | -  | -           | -           | -           | -           | -           |             | -            | -           |

| Statistical Summa | iry |
|-------------------|-----|
|-------------------|-----|

| Maximum Concentration | <0.2 | <0.2 | <0.2 | <0.05 | <0.05 | <0.2 | <0.2 | <0.2 | <2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
|-----------------------|------|------|------|-------|-------|------|------|------|----|------|------|------|------|------|------|------|------|
| Average Concentration | <0.2 | <0.2 | <0.2 | <0.05 | <0.05 | <0.2 | <0.2 | <0.2 | <2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| Standard Deviation    | 0    | 0    | 0    |       |       | 0    | 0    | 0    | 0  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |



|   |              |               |          |           |         |                  | Orga                 | anophos       | sphorou        | s Pestici | des     |            |            |        |          |               |                   |
|---|--------------|---------------|----------|-----------|---------|------------------|----------------------|---------------|----------------|-----------|---------|------------|------------|--------|----------|---------------|-------------------|
|   | Fenitrothion | Fensulfothion | Fenthion | Malathion | Merphos | Methyl parathion | Mevinphos (Phosdrin) | Monocrotophos | Naled (Dibrom) | Omethoate | Phorate | Prothiofos | Pyrazophos | Ronnel | Terbufos | Trichloronate | Tetrachlorvinphos |
|   | mg/kg        | mg/kg         | mg/kg    | mg/kg     | mg/kg   | mg/kg            | mg/kg                | mg/kg         | mg/kg          | mg/kg     | mg/kg   | mg/kg      | mg/kg      | mg/kg  | mg/kg    | mg/kg         | mg/kg             |
| LOR   | 0.2          | 0.2           | 0.2      | 0.2       | 0.2     | 0.2              | 0.2                  | 2             | 0.2            | 2         | 0.2     | 0.05       | 0.2        | 0.2    | 0.2      | 0.2           | 0.2               |
| NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged 0-2m                 |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
| NEPM 2013 HIL, Residential A  |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
| 0-1m  |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
| 1-2m  |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
|   |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |
| 2-4m  |              |               |          |           |         |                  |                      |               |                |           |         |            |            |        |          |               |                   |

| Site                    | Location                              | Field ID                  | Sample Date  |          |             |             |              |              |                |             |                |             |          |             |       |              |      |             |             |          |
|-------------------------|---------------------------------------|---------------------------|--------------|----------|-------------|-------------|--------------|--------------|----------------|-------------|----------------|-------------|----------|-------------|-------|--------------|------|-------------|-------------|----------|
|                         | Т                                     | P01_0.2                   |              | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           | -           | -        |
|                         | Т                                     | P01_0.9                   |              | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           | -           | -        |
|                         | Т                                     | P02_0.1                   |              | <0.2     | <0.2        | <0.2        | <0.2         | <0.2         | <0.2           | <0.2        | <2             | <0.2        | <2       | <0.2        | -     | <0.2         | <0.2 | <0.2        | <0.2        | <0.2     |
|                         | Т                                     | P02_0.4                   |              | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           | - 1         | -        |
|                         | Т                                     | P03_0.2                   | 1            | <0.2     | <0.2        | <0.2        | <0.2         | <0.2         | <0.2           | <0.2        | <2             | <0.2        | <2       | <0.2        | -     | <0.2         | <0.2 | <0.2        | <0.2        | <0.2     |
|                         | Т                                     | <br>P03 1.2               | 1            | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           | -           | -        |
|                         | Т                                     | <br>P04_0.1               | 1            | <0.2     | <0.2        | <0.2        | <0.2         | <0.2         | <0.2           | <0.2        | <2             | <0.2        | <2       | <0.2        | -     | <0.2         | <0.2 | <0.2        | <0.2        | <0.2     |
|                         | т                                     | P05 0.1                   | -            | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           | - 1         | -        |
|                         | т                                     | P05 0.9                   | 1            | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           | - 1         | -        |
|                         | т                                     | P06 0.1                   | 1            | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           | - 1         | -        |
|                         | т                                     | P06_0.3                   | 10/11/2018   | -        | -           | -           | -            | -            | _              | -           | -              | -           | -        | -           | -     | -            | _    | -           |             | -        |
|                         | Т                                     | P07 0.1                   | -            | -        | _           | -           | _            | -            | _              | -           | -              | -           | -        | -           | _     | -            | _    | _           |             | -        |
|                         | Т                                     | P07 0.4                   | -            | -        | _           | _           | _            | -            | _              | _           | -              | -           | -        | -           | _     | _            | _    | _           |             | -        |
|                         |                                       | P07_0.6                   | -            |          | -           | -           | _            | _            | _              |             | -              | -           | -        | -           | _     |              | _    | _           |             | -        |
|                         |                                       | PO8 0.4                   | -            |          | -           | -           | _            | _            | -              | -           | -              | -           | -        | -           | -     |              | -    | _           |             |          |
| 1                       | · · ·                                 |                           | -            | <u> </u> | _           | _           | _            | _            | _              | _           | _              | -           | -        | _           | _     |              | _    |             |             | <u> </u> |
|                         | · · · · · · · · · · · · · · · · · · · | <u>-05_0.5</u><br>210 0 1 | -            | <u> </u> | <u> </u>    | _           | _            | _            | _              | _           | _              | -           | -        | _           | _     | _            | _    |             |             | <u> </u> |
|                         | · · · · · · · · · · · · · · · · · · · | D11 0 2                   | -            | <0.2     | <02         | <02         | <02          | <02          | <02            | <0.2        | <u>د</u> ا     | <02         | د۲       | <02         |       | <0.2         | <02  | <02         | <0.2        | <0.2     |
| 1                       | · · · · · · · · · · · · · · · · · · · | <u></u><br>D11 1 2        | -            |          |             |             |              |              | -0.2           |             | -              |             | -        |             |       |              | -0.2 | -           |             |          |
| 1                       | · · · · · · · · · · · · · · · · · · · | <u></u>                   | -            | -0.2     | -02         | -0.2        | 0 2          | -0.2         | -0.2           | -0.2        | -2             | -0.2        | - 7      | -0.2        | _     | -0.2         | -0.2 | -02         | -0.2        | -0.2     |
| 1                       | · · · · · ·                           | <u></u>                   |              | <0.2     | <0.2        | <0.2        | <0.2         | <0.2         | <0.2           | <0.2        | ~2             | ~0.2        | ~2       | <0.2        | -     | <0.2         | <0.2 | <0.2        | <0.2        | <0.2     |
|                         |                                       | P15_0.1                   | -            | <0.z     | <b>\U.Z</b> | <u>\U.2</u> | <u>\</u> 0.2 | <u>\</u> 0.2 | <u><u></u></u> | <u>\0.2</u> | <u>\</u>       | <b>\U.2</b> | <u>\</u> | <b>\U.2</b> | -     | <u>\</u> 0.2 | <0.z | <b>\U.Z</b> | <u>\0.2</u> | <0.2     |
|                         |                                       | P15_0.4                   | -            | <u> </u> | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           | - <u>-</u>  | <u> </u> |
| Kucomagh Infants School |                                       | P14_0.1                   | -            |          | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           |             |          |
| Kyeemagn mants school   | <u>'</u>                              | P14_0.7                   | -            | -        | -           | -           | -            | -            | -              |             |                | -           | -        | -           | -     | -            | -    | -           |             |          |
|                         | <u>'</u>                              | P15_0.1                   | -            |          | -           | -           | -            | -            | -              | -           | -              | -           | 2        | -           | -     | -            | -    |             |             | -0.2     |
|                         | · · ·                                 | <u>P15_0.0</u>            | 17/11/2018   | <0.2     | <0.2        | <0.2        | <0.2         | <0.2         | <0.2           | <0.2        | <u> &lt;</u> 2 | <0.2        | ٢٢       | <0.2        | -     | <0.2         | <0.2 | <0.2        | <0.2        | <0.2     |
|                         |                                       | <u>P16_0.1</u>            | -            | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           |             |          |
|                         |                                       | P16_0.8                   | -            | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           |             |          |
|                         |                                       | <u>P17_0.1</u>            | -            | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           |             |          |
|                         |                                       | <u>P1/_0.5</u>            | -            | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           | -           | -        |
|                         |                                       | P18_0.1                   | -            | <0.2     | <0.2        | <0.2        | <0.2         | <0.2         | <0.2           | <0.2        | <2             | <0.2        | <2       | <0.2        | -     | <0.2         | <0.2 | <0.2        | <0.2        | <0.2     |
|                         |                                       | P18_0.4                   |              | -        | -           | -           | -            | -            | -              |             | -              | -           | -        | -           | -     | -            | -    | -           |             |          |
|                         |                                       | <u>P19_0.1</u>            | 10/11/2018   | -        | -           | -           | -            | -            | -              |             | -              | -           | -        | -           | -     | -            | -    | -           |             |          |
|                         |                                       | P19_0.3                   | 1            | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           | -           | -        |
|                         | i                                     | P20_0.1                   | -            | <0.2     | <0.2        | <0.2        | <0.2         | <0.2         | <0.2           | <0.2        | <2             | <0.2        | <2       | <0.2        | -     | <0.2         | <0.2 | <0.2        | <0.2        | <0.2     |
|                         | В                                     | H02_0.5                   | 17/11/2018   | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           |             | -        |
|                         | E E                                   | 3H2_1.0                   |              | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           |             |          |
|                         | В                                     | H03_0.5                   |              | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           |             |          |
|                         | E                                     | 3H4_0.4                   | -            | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           |             | -        |
|                         | BHC                                   | )5_0.2-0.5                | - 10/11/2018 | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           |             | -        |
|                         | ТР                                    | 03_ASB1                   | -            | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           |             | -        |
|                         | T                                     | P04_0.4                   |              | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           | -           | -        |
|                         |                                       | ASB2                      | 17/11/2018   | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           |             | -        |
|                         | TP12_0.2                              | QA100                     | 10/11/2018   | <0.2     | <0.2        | <0.2        | <0.2         | <0.2         | <0.2           | <0.2        | <2             | <0.2        | <2       | <0.2        | -     | <0.2         | <0.2 | <0.2        | <0.2        | <0.2     |
|                         | TP12_0.2                              | QA200                     |              | -        | -           | <0.05       | <0.05        | -            | <0.2           | -           | <0.2           | -           | -        | -           | <0.05 | -            | -    | -           | -           | -        |
|                         | TP16_0.1                              | QA300                     | 17/11/2018   | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           | -           | -        |
|                         | TP16_0.1                              | QA400                     |              | -        | -           | -           | -            | -            | -              | -           | -              | -           | -        | -           | -     | -            | -    | -           |             | -        |

| Maximum Concentration | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <2 | <0.2 | <2 | <0.2 | <0.05 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
|-----------------------|------|------|------|------|------|------|------|----|------|----|------|-------|------|------|------|------|------|
| Average Concentration | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <2 | <0.2 | <2 | <0.2 | <0.05 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| Standard Deviation    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0  | 0    | 0  | 0    |       | 0    | 0    | 0    | 0    | 0    |



|   |                     |                  |                      | Solvents | 5              |                  |               |                  | . F        | Pesticide | s                 |                 |               |               | Poly          | chlorina      | ted Biph      | enyls         |               |                     |
|---|---------------------|------------------|----------------------|----------|----------------|------------------|---------------|------------------|------------|-----------|-------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------------|
|   | Methyl Ethyl Ketone | 2-hexanone (MBK) | 4-Methyl-2-pentanone | Acetone  | Allyl chloride | Carbon disulfide | Vinyl acetate | Demeton-S-methyl | Fenamiphos | Parathion | Pirimiphos-methyl | Pirimphos-ethyl | Arochlor 1016 | Arochlor 1221 | Arochlor 1232 | Arochlor 1242 | Arochlor 1248 | Arochlor 1254 | Arochlor 1260 | PCBs (Sum of total) |
|   |                     |                  |                      |          |                |                  |               |                  |            |           | 0.2               |                 | 0.1           | 0.1           | 0.1           | 0.1           | 0.1           | 0.1           | 0.1           | 0.1                 |
|   | 0.5                 | 5                | 0.5                  | 0.5      | 0.5            | 0.5              | 5             | 0.05             | 0.05       | 0.2       | 0.2               | 0.05            | 0.1           | 0.1           | 0.1           | 0.1           | 0.1           | 0.1           | 0.1           | 0.1                 |
| NEPM 2013 EIL UR/POS, IOW PH, CEC, Clay content - aged 0-2m                 |                     |                  |                      |          |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |
| NEPM 2013 ESL UR/POS, Coarse Soil 0-2m / CCME 2010 SQGs                     |                     |                  |                      |          |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |
| CRCCARE 2011 Soil HSL for Direct Contact, Intrusive Maintenance Worker 0-1m | <u> </u>            |                  |                      |          |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |
| NEPM 2013 Schedule B1 Table 7 Asbestos HSLs                                 |                     |                  |                      |          |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |
| NEPM 2013 HIL, Residential A  |                     |                  |                      |          |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               | 1                   |
| NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand              |                     |                  |                      |          |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |
| 0-1m  |                     |                  |                      |          |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |
| 1-2m  |                     |                  |                      |          |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |
| 2-4m  |                     |                  |                      |          |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |
| >4m   |                     |                  |                      |          |                |                  |               |                  |            |           |                   |                 |               |               |               |               |               |               |               |                     |

| Image: Prime Prim Prime Prime Prime Prime Prime Prime Prime P  | Site                    | Location | Field ID  | Sample Date  |      |    |      |      |      |      |    |       |       |      |      |       |      |      |          |      |      |          |              |      |
|--|-------------------------|----------|-----------|--------------|------|----|------|------|------|------|----|-------|-------|------|------|-------|------|------|----------|------|------|----------|--------------|------|
|  |                         | TP       | 01_0.2    |              | -    | -  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | -    | -        |              | -    |
| Image: Image   |                         | TP       | 01_0.9    |              | -    | -  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | -    | -        | [ - ]        | -    |
| Image: Image   |                         | TP       | 02_0.1    |              | -    | -  | -    | -    | -    | -    | -  | -     | -     | <0.2 | <0.2 | -     | <0.1 | <0.1 | <0.1     | <0.1 | <0.1 | <0.1     | <0.1         | <0.1 |
| Image: Problement in the state of the s   |                         | TP       | 02_0.4    |              | -    | -  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | -    | -        | -            | -    |
| <tt>        Implified if item       Implified if item       No       No</tt>  |                         | TP       | 03_0.2    | -            | -    | -  | -    | -    | -    | -    | -  | -     | -     | <0.2 | <0.2 | -     | <0.1 | <0.1 | <0.1     | <0.1 | <0.1 | <0.1     | <0.1         | <0.1 |
|  |                         | TP       | 03 1.2    |              | <0.5 | -  | <0.5 | <0.5 | <0.5 | <0.5 | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | -    | -        | -            | -    |
| Image: Image   |                         | TP       | 04 0.1    |              | -    | -  | -    | -    | -    | -    | -  | -     | -     | <0.2 | <0.2 | -     | <0.1 | <0.1 | <0.1     | <0.1 | <0.1 | <0.1     | <0.1         | <0.1 |
| Impo       |                         | TP       | 05 0.1    | -            | -    | -  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | _    | -        | -            | -    |
| Imp     Imp </td <td></td> <td>ТР</td> <td></td> <td>-</td> <td>&lt;0.5</td> <td>-</td> <td>&lt;0.5</td> <td>&lt;0.5</td> <td>&lt;0.5</td> <td>&lt;0.5</td> <td>-</td>  |                         | ТР       |           | -            | <0.5 | -  | <0.5 | <0.5 | <0.5 | <0.5 | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | -    | -        | -            | -    |
| Image:   |                         | TP       | 06 0.1    |              | -    | -  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | _    | -        | -            | -    |
| Image: Set in the se   |                         | TP       | 06 0.3    | - 10/11/2018 | <0.5 | -  | <0.5 | <0.5 | <0.5 | <0.5 | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | _    | -        | -            | -    |
| Image: Field in the set of the set o  |                         | TP       | 07 0.1    | -            | -    | _  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | _    | -        | -            | _    |
| Image:   |                         | ТР       | 07_0.4    |              | -    | _  | -    | -    | _    | -    | _  | -     | _     | -    | -    | -     | -    | _    | -        | -    | _    | _        | -            | _    |
| Image in the set of t  |                         | ТР       | 07_06     | -            | -    | _  | -    | -    | _    | -    | _  | -     | -     | -    | -    | -     | -    | _    | -        | -    | _    |          | <u> </u>     | -    |
| Net         Net <td></td> <td>ТР</td> <td>08 0 4</td> <td>-</td> <td>&lt;0.5</td> <td></td> <td>&lt;0.5</td> <td>&lt;05</td> <td>&lt;0.5</td> <td>&lt;0.5</td> <td></td> <td>-</td> <td></td> <td>-</td> <td>-</td> <td></td> <td>-</td> <td></td> <td>  <br/>-</td> <td></td> <td></td> <td></td> <td>  <br/>-</td> <td>-</td>  |                         | ТР       | 08 0 4    | -            | <0.5 |    | <0.5 | <05  | <0.5 | <0.5 |    | -     |       | -    | -    |       | -    |      | <br>-    |      |      |          | <br>-        | -    |
| Image:   |                         | ТР       | 00_0.4    | -            | <0.5 |    | <0.5 | <0.5 | <0.5 | <0.5 |    |       |       |      |      | _     | _    | _    |          | _    |      |          |              |      |
| Image:   |                         |          | 10 0 1    | -            |      | -  | -    | -    | -    | -    |    |       | -     | -    |      | -     | -    | -    |          | -    | -    |          | '            | -    |
| Image: biase interms         Image: b  |                         |          | 10_0.1    | -            |      | -  | -    | -    | -    | -    | -  |       | -     | -    |      | -     | -    | -    | -        | -    | -    | -        |              |      |
| Impl_12         Impl_22         Impl_24  |                         |          | 11_0.2    | _            | -    | -  | -    | -    | -    | -    | -  | -     | -     | <0.2 | <0.2 | -     | <0.1 | <0.1 | <0.1     | <0.1 | <0.1 | <0.1     | <0.1         | <0.1 |
| Implication     Im   |                         |          | 11_1.2    | _            | <0.5 | -  | <0.5 | <0.5 | <0.5 | <0.5 | -  |       | -     | -    | -    | -     | -    | -    | -        | -    | -    | -        | -            | -    |
| Image: image:   |                         | IP<br>TP | 12_0.2    |              | -    | -  | -    | -    | -    | -    | -  | -     | -     | <0.2 | <0.2 | -     | <0.1 | <0.1 | <0.1     | <0.1 | <0.1 | <0.1     | <0.1         | <0.1 |
| Image: problemImage:   |                         |          | 13_0.1    | _            | <0.5 | -  | <0.5 | <0.5 | <0.5 | <0.5 | -  | -     | -     | <0.2 | <0.2 | -     | <0.1 | <0.1 | <0.1     | <0.1 | <0.1 | <0.1     | <0.1         | <0.1 |
| Nyeenagh Infants Schol         TP14_0.7         TP14_0.7         TP15_0.1         TP15_0.1         TP15_0.1         TP16_0.1         TP16_0  |                         | TP       | 13_0.4    | _            | -    | -  | -    | -    | -    | -    | -  |       | -     | -    | -    | -     | -    | -    |          | -    | -    |          | <u>⊢ -  </u> | -    |
| kyeemagh intants school     TP14_0.7  <  |                         | TP       | 14_0.1    | _            | -    | -  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    |          | -    | -    |          | <u>⊢ -  </u> | -    |
| Image: pictureImage:   | Kyeemagh Infants School | TP       | 14_0.7    | _            | <0.5 | -  | <0.5 | <0.5 | <0.5 | <0.5 | -  | -     | -     | -    | -    | -     | -    | -    |          | -    | -    |          | <u>⊢ -  </u> | -    |
| Impleone     Pipleone     Pip  |                         | ТР       | 15_0.1    | _            | -    | -  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    |          | -    | -    | <u>/</u> | <u>-</u>     | -    |
| P16_01         P16_01         P16_08           P11_0.8           P11_0.8           P11_0.1           P11_0.5           P11_0.5           P11_0.5           P11_0.5           P11_0.1           P11_0.5           P11_0.1           P11_0.5           P11_0.1           P11_0.5           P11_0.1   |                         | TP       | 15_0.6    |              | <0.5 | -  | <0.5 | <0.5 | <0.5 | <0.5 | -  | -     | -     | <0.2 | <0.2 | -     | <0.1 | <0.1 | <0.1     | <0.1 | <0.1 | <0.1     | <0.1         | <0.1 |
| ITHE_0.8 ITHE_0.1<   |                         | ТР       | 16_0.1    |              | -    | -  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    | <u> </u> | -    | -    | !        | <u> </u>     | -    |
| $ \begin{array}{                                    $  |                         | TP       | 16_0.8    |              | <0.5 | -  | <0.5 | <0.5 | <0.5 | <0.5 | -  | -     | -     | -    | -    | -     | -    | -    |          | -    | -    |          | <u> </u>     | -    |
| Implified     Implified   <  |                         | TP       | 17_0.1    |              | -    | -  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    | !        | -    | -    | -        | <u> </u>     | -    |
| $ \begin{array}{ c c c c c c } \hline P18 & 0.1 & 0.$  |                         | TP       | 17_0.5    |              | <0.5 | -  | <0.5 | <0.5 | <0.5 | <0.5 | -  | -     | -     | -    | -    | -     | -    | -    |          | -    | -    |          | <u> </u>     | -    |
| $ \begin{array}{ c c c c c } \hline \begin matrix red red red red red red red red red red$   |                         | TP       | 18_0.1    |              | -    | -  | -    | -    | -    | -    | -  | -     | -     | <0.2 | <0.2 | -     | <0.1 | <0.1 | <0.1     | <0.1 | <0.1 | <0.1     | <0.1         | <0.1 |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$  |                         | TP       | 18_0.4    |              | <0.5 | -  | <0.5 | <0.5 | <0.5 | <0.5 | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | -    | -        | <u> </u>     | -    |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$  |                         | TP       | 19_0.1    | 10/11/2018   | -    | -  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | -    | -        | -            | -    |
| $ \begin{split} \begin{split} & \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$   |                         | TP       | 19_0.3    | 10/11/2018   | -    | -  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | -    | -        | -            | -    |
| $ \begin{split} \begin{split} \  \overrightarrow{B} \  $ |                         | TP       | 20_0.1    |              | -    | -  | -    | -    | -    | -    | -  | -     | -     | <0.2 | <0.2 | -     | <0.1 | <0.1 | <0.1     | <0.1 | <0.1 | <0.1     | <0.1         | <0.1 |
| $ \begin{split} \  \left\  \left$  |                         | BH       | 02_0.5    | 17/11/2019   | -    | -  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | -    | -        |              | -    |
| $ \begin{split} \  \mathbb{B} \  \mathbb{N} \  $   |                         | Bł       | H2_1.0    | 17/11/2018   | <0.5 | -  | <0.5 | <0.5 | <0.5 | <0.5 | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | -    | -        |              | -    |
| $ \begin{split} & \begin{tikzbarray}{ c c c c } & & \begin{tikzbarray}{ c c c c c } & & \begin{tikzbarray}{ c c c c c c } & & \begin{tikzbarray}{ c c c c c c c } & & \begin{tikzbarray}{ c c c c c c c c c c c c c c c c c c c$   |                         | BH       | 03_0.5    |              | -    | -  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | -    | -        |              | -    |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$  |                         | Bł       | H4_0.4    |              | -    | -  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | -    | _        | [ - ]        | -    |
| TPU-ASB1       ID/II/2018       -  |                         | BHO      | 5_0.2-0.5 | 10/11/2018   | <0.5 | -  | <0.5 | <0.5 | <0.5 | <0.5 | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | -    | -        | - T          | -    |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$  |                         | TPO      | 3_ASB1    | 10/11/2018   | -    | -  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | -    | -        | -            | -    |
| NAME         |                         | TP       | 04_0.4    | -            | -    | -  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | -    | _        | -            | _    |
| TP12_0.2       QA100       10/11/2018       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       <       < <td></td> <td></td> <td><br/>ASB2</td> <td>17/11/2018</td> <td>-</td>   |                         |          | <br>ASB2  | 17/11/2018   | -    | -  | -    | -    | -    | -    | -  | -     | -     | -    | -    | -     | -    | -    | -        | -    | -    | -        | -            | -    |
| TP12_0.2     QA200     10/11/2018 <td></td> <td>TP12 0.2</td> <td>QA100</td> <td></td> <td>&lt;0.5</td> <td>-</td> <td>&lt;0.5</td> <td>&lt;0.5</td> <td>&lt;0.5</td> <td>&lt;0.5</td> <td>-</td> <td>-</td> <td>-</td> <td>&lt;0.2</td> <td>&lt;0.2</td> <td>-</td> <td>&lt;0.1</td> <td>&lt;0.1</td> <td>&lt;0.1</td> <td>&lt;0.1</td> <td>&lt;0.1</td> <td>&lt;0.1</td> <td>&lt;0.1</td> <td>&lt;0.1</td>   |                         | TP12 0.2 | QA100     |              | <0.5 | -  | <0.5 | <0.5 | <0.5 | <0.5 | -  | -     | -     | <0.2 | <0.2 | -     | <0.1 | <0.1 | <0.1     | <0.1 | <0.1 | <0.1     | <0.1         | <0.1 |
| TP16_0.1       QA300       17/11/2018       - <td></td> <td>TP12 0.2</td> <td>QA200</td> <td>10/11/2018</td> <td>&lt;5</td> <td>&lt;5</td> <td>&lt;5</td> <td>-</td> <td>-</td> <td>&lt;0.5</td> <td>&lt;5</td> <td>&lt;0.05</td> <td>&lt;0.05</td> <td>&lt;0.2</td> <td>-</td> <td>&lt;0.05</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>&lt;0.1</td>  |                         | TP12 0.2 | QA200     | 10/11/2018   | <5   | <5 | <5   | -    | -    | <0.5 | <5 | <0.05 | <0.05 | <0.2 | -    | <0.05 | -    | -    | -        | -    | -    | -        | -            | <0.1 |
| TP16_0.1 QA400 17/11/2018  |                         | TP16 0.1 | QA300     |              | -    | _  | -    | -    | -    | -    | _  | -     | -     | -    | -    | -     | -    | -    | -        | -    | _    | -        | -            | -    |
|  |                         |          | QA400     | 17/11/2018   | -    | _  | -    | -    | -    | -    | _  | -     | -     | -    | -    | -     | -    | -    | -        | -    | _    | -        | -            | -    |

| Maximum Concentration | <5 | <5 | <5 | <0.5 | <0.5 | <0.5 | <5 | <0.05 | <0.05 | <0.2 | <0.2 | <0.05 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
|-----------------------|----|----|----|------|------|------|----|-------|-------|------|------|-------|------|------|------|------|------|------|------|------|
| Average Concentration | <5 | <5 | <5 | <0.5 | <0.5 | <0.5 | <5 | <0.05 | <0.05 | <0.2 | <0.2 | <0.05 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Standard Deviation    | 1  |    | 1  | 0    | 0    | 0    |    |       |       | 0    | 0    |       | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |

| Frail Acidity            | Acid<br>Trail       | Neutralising<br>Capacity   | Reducible<br>Sulfur  | Oxidisable<br>Sulfur                           | TSA  | ТРА  | Peroxide<br>pH  | pH kcl  | Reaction  | рН <sub>F</sub> -<br>pН <sub>FOX</sub>   | рН <sub>FOX</sub>   | рН <sub>F</sub>  | Material Type  | Filling (F) /  | Date   | Depth (m)  | Location   |
|--------------------------|---------------------|--|--|--|--|--|-----------------|---|---|--|---|--|--|--|--|--|--|
| TAA<br>Mole %S C<br>H+/t | TAA<br>Mole<br>H+/t | %S   | %S   | %S   | mol H+/t   | mol H+/t   | pH Units        | pH units  | Rate  | pH units   | pH units  | pH units   | material Type  | Natural (N)  | Sampled  | Deptii (iii)   | Location   |
| 3 <0.02                  | 3                   | n/a  | <0.005   | <0.02  | <0.02  | <2   | 4.8             | 5.8   | 1   | 2.2  | 4.2   | 6.4  | Silty Sand   | F  | 10/11/2018   | 1.0-1.45   | BH01_1.0-1.45  |
|                          | -                   | -  | -  | -  | -  | -  | -               | -   | 1   | 1.5  | 4.8   | 6.3  | Silty Sand   | Ν  | 10/11/2018   | 2.5-2.95   | BH01_2.5-2.95  |
|                          | -                   | -  | -  | -  | -  | -  | -               | -   | 1   | 1.4  | 5.7   | 7.1  | Silty Sand   | Ν  | 10/11/2018   | 3.0-3.45   | BH01_3.0-3.45  |
|                          | -                   | -  | -  | -  | -  | -  | -               | -   | 1   | 1.7  | 5   | 6.7  | Silty Sand   | Ν  | 10/11/2018   | 4.0-4.45   | BH01_4.0-4.45  |
|                          | -                   | -  | -  | -  | -  | -  | -               | -   | 1   | 1.5  | 7.7   | 9.2  | Sand   | Ν  | 10/11/2018   | 5.0-5.95   | BH01_5.5-5.95  |
|                          | -                   | -  | -  | -  | -  | -  | -               | -   | 2   | 3.9  | 5.1   | 9  | Silty Clay   | Ν  | 10/11/2018   | 7.0-7.45   | BH01_7.0-7.45  |
| <2 <0.02                 | <2                  | 0.90   | 0.34   | 0.4  | <2   | <2   | 7.3             | 9   | 3   | 4.7  | 4.2   | 8.9  | Sandy Clay   | Ν  | 10/11/2018   | 8.5-8.95   | BH01_8.5-8.95  |
| <2 <0.02                 | <2                  | 0.40   | 0.16   | 0.15   | <2   | <2   | 7               | 9.2   | 3   | 4.9  | 4.3   | 9.2  | Clayey Sand  | Ν  | 10/11/2018   | 10.0-10.45   | BH01_10.0-10.45  |
|                          | -                   | -  | -  | -  | -  | -  | -               | -   | 1   | 1.4  | 7.1   | 8.5  | Clayey Sand  | Ν  | 10/11/2018   | 11.0-11.45   | BH01_11.0-11.45  |
|                          | -                   | -  | -  | -  | -  | -  | -               | -   | 4   | 3.1  | 5.2   | 8.3  | Sand   | Ν  | 10/11/2018   | 13.0-13.45   | BH01_13.0-13.45  |
|                          | -                   | -  | -  | -  | -  | -  | -               | -   | 1   | 2.4  | 5.8   | 8.2  | Sand   | Ν  | 10/11/2018   | 14.5-14.95   | BH01_14.5-14.95  |
| 7 0.06                   | 7                   | n/a  | 0.05   | 0.07   | 40   | 47   | 4.4             | 5.5   | 2   | 3.8  | 3.1   | 6.9  | Sand   | Ν  | 10/11/2018   | 16.0-16.45   | BH01_16.0-16.45  |
|                          | -                   | -  | -  | -  | -  | -  | -               | -   | 1   | 1.7  | 6.1   | 7.8  | Silty Sand   | Ν  | 17/11/2018   | 2.0-2.45   | BH02_2.0-2.45  |
| <2 <0.02                 | <2                  | n/a  | <0.005   | 0.24   | <2   | <2   | 7.2             | 5.9   | 1   | 1.6  | 5.2   | 6.8  | Sand   | Ν  | 17/11/2018   | 4.0-4.45   | BH02_4.0-4.45  |
|                          | -                   | -  | -  | -  | -  | -  | -               | -   | 1   | 2.1  | 7.5   | 9.6  | Sand   | Ν  | 17/11/2018   | 5.5-5.95   | BH02_5.5-5.95  |
| <2 <0.02                 | <2                  | 0.56   | 0.13   | 0.06   | <2   | <2   | 7.2             | 9.1   | 4   | 2.6  | 6.2   | 8.8  | Sand   | Ν  | 17/11/2018   | 7.0-7.45   | BH02_7.0-7.45  |
|                          | -                   | -  | -  | -  | -  | -  | -               | -   | 4   | 2.7  | 5.9   | 8.6  | Sandy Clay   | Ν  | 17/11/2018   | 8.5-8.95   | BH02_8.5-8.95  |
|                          | -                   | -  | -  | -  | -  | -  | -               | -   | 4   | 4  | 5.1   | 9.1  | Sandy Clay   | Ν  | 17/11/2018   | 10.0-10.45   | BH02_10.0-10.45  |
| <2 <0.02                 | <2                  | 0.31   | 0.082  | 0.09   | <2   | <2   | 7.4             | 9.3   | 4   | 4.5  | 4.5   | 9  | Sandy Clay   | Ν  | 17/11/2018   | 11.5-11.95   | BH02_11.5-11.95  |
|                          | -                   | -  | -  | -  | -  | -  | -               | -   | 4   | 0.3  | 7.9   | 8.2  | Sandy Clay   | Ν  | 17/11/2018   | 13.0-13.45   | BH02_13.0-13.45  |
|                          | -                   | -  | -  | -  | -  | -  | -               | -   | 1   | 2.1  | 6.7   | 8.8  | Sand   | Ν  | 17/11/2018   | 14.5-14.95   | BH02_14.5-14.95  |
|                          | -                   | -  | -  | -  | -  | -  | -               | -   | 4   | 0.5  | 6.4   | 6.9  | Sandy Clay   | Ν  | 17/11/2018   | 16.0-16.45   | BH02_16.0-16.45  |
|                          | -                   | -  | -  | -  | -  | -  | -               | -   | 4   | 0.6  | 5.6   | 6.2  | Clayey Sand  | Ν  | 17/11/2018   | 17.5-17.95   | BH02_17.5-17.95  |
| 2 0.02                   | 2                   | 0.02   | 0.005  | 0.02   | 2  | 2  | 0.1             | 0.1   | -   | -  | -   | -  | Eurofins LOR   |  | Value  | Guideline  |  |
|                          | -                   | -  | -  |  |  |  | -               | -   | -   | 1 <sup>4</sup>   | < 4 <sup>3</sup>  | 4 - 5.5 <sup>1</sup>   | )  | dicator Value  | Sulfate Soil Ir  | otential Acid  | ASSMAC (1998) P  |
|                          | -                   | -  | -  |  |  |  | -               | -   | -   | -  | -   | ≤ 4 <sup>2</sup>   |  | cator Value  | Ifate Soil Indi  | ctual Acid Su  | ASSMAC (1998) A  |
| 18 0.03                  | 18                  | -  | 0.03   | 0.03   | 18   | 18   | -               | -   | -   | -  | -   | -  | nnes) 5  | s (1 - 1000 to   | - Coarse Soil  | ction Criteria   | ASSMAC (1998) A  |
| 36 0.06                  | 36                  | -  | 0.06   | 0.06   | 36   | 36   | -               | -   | -   | -  | -   | -  | onnes) <sup>6</sup>  | ls (1 - 1000 to  | - Medium Soi   | ction Criteria   | ASSMAC (1998) A  |
| 62 0.10                  | 62                  | -  | 0.10   | 0.10   | 62   | 62   | -               | -   | -   | -  | -   | -  | es) <sup>7</sup>   | 1 - 1000 tonne   | - Fine Soils (   | ction Criteria   | ASSMAC (1998) A  |
| 18 0.03                  | 18                  | -  | 0.03   | 0.03   | 18   | 18   | -               | -   | -   | -  | -   | -  | nes) 5   | s (>1000 tonn  | - Coarse Soil  | ction Criteria   | ASSMAC (1998) A  |
| 18 0.03                  | 18                  | -  | 0.03   | 0.03   | 18   | 18   | -               | -   | -   | -  | -   | -  | nes) <sup>6</sup>  | ls (>1000 ton  | - Medium Soi   | ction Criteria   | ASSMAC (1998) A  |
| 18 0.03                  | 18                  | -  | 0.03   | 0.03   | 18   | 18   | -               | -   | -   | -  | -   | -  | ) <sup>7</sup>   | >1000 tonnes)  | - Fine Soils (:  | ction Criteria   | ASSMAC (1998) A  |
|                          |                     |  |  |  |  |  | <u>.</u>        | 1 1   |   |  |   |  | ·  |  | ·  |  | Notes to Table:  |
|                          |                     |  |  |  |  |  |                 | soils   | tual acid sulfate   | irmatory of act  | but is not confi  | n of sulfides,   | vious or limited oxidation   | sult of some prev  | d may be the res   | <5.5 are acid an   | 1 - pH values >4 and <   |
|                          |                     |  |  |  |  |  | /ater)          | d soil pore w   | in acid soils (an   | oast, resulting  | oxidized in the p   | having been o  | esent with the sulfides  | fate soils are pre   | at actual acid sul   | ≤4, indicates tha  | 2 - pH readings of pH≤   |
|                          |                     |  |  | les  | sence of sulfid  | sitive the nres  | 3 the more or   | trops below "   | nore the nH <sub>roy</sub> (  | te soils. The r  | ential acid sulfa   | ainty of a not   | sitive result.<br>re is a high level of cert   | dication of a pos  | the better the inc   | pH <sub>FOX</sub> value is,<br>there was a stro  | 3 - The lower the final $\therefore$ If the pH <sub>rox</sub> < 3 and  |
|                          |                     |  |  |  |  |  | o, ale more pe  |   |   |  |   | resent.  | confirm if sulfides are p  | are needed to c  | oratory analyses   | positive and labo  | » A pH <sub>FOX</sub> 3-4 is less p  |
|                          |                     |  |  |  |  |  |                 | conditions.   | quick test field o  | eactive under  | and be poorly r   | all quantities   | be present either in sm  | e. Sulfides may l  | sitive nor negative  | st is neither pos  | » For pH <sub>FOX</sub> 4-5 the te   |
|                          |                     |  |  | icid sulfate soils.                            | of a potential a   | the value is o   | nore indicative | ements, the n   | the two measure   | ence between   | eater the differe   | soils. The gre   | acid generating ability te potential acid sulfate  | d value, little net $_{0x}$ , it may indicat   | below field pH <sub>FC</sub>   | tle or no drop in<br>at least one unit   | <ul> <li>For pH<sub>FOX</sub> &gt;5 and litt</li> <li>4 - If the pH<sub>F</sub> value is a</li> </ul>  |
|                          |                     |  |  |  | -  |  |                 |   |   |  |   | ≤ 5%   | ontent (% < 0.002mm)   | roximate clav co   | my sands - Ann   | ise sands to loa   | 5 - coarse soils compri  |
|                          |                     |  |  |  |  |  |                 |   |   |  | 5 and 40%   | nm) between  | ay content (% < $0.002$  | Approximate cla  | ns to light clays -  | prise sandy loan   | 6 - Medium soils comp  |
|                          |                     | -<br>0.31<br>-<br>-<br>-<br>-<br>0.02<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>- | -<br>0.082<br>-<br>-<br>-<br>0.005<br>-<br>-<br>0.03<br>0.06<br>0.10<br>0.03<br>0.03<br>0.03<br>0.03 | - 0.09 0.02 0.03 0.03 0.03 0.03 0.03 0.03 0.03 | -<br>-<br>-<br>-<br>-<br>2<br>18<br>36<br>62<br>18<br>18<br>18<br>18<br>18<br>5 ence of sulfid | -<br>-<br>-<br>-<br>-<br>2<br>18<br>36<br>62<br>18<br>18<br>18<br>18<br>18<br>18<br>18<br>sitive the press | - 7.4           | -<br>9.3<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>- | 4           4           1           4           - | 4<br>4.5<br>0.3<br>2.1<br>0.5<br>0.6<br>-<br>1 <sup>4</sup><br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>- | $5.1$ $4.5$ $7.9$ $6.7$ $6.4$ $5.6$ $ < 4^3$ $   -$ < | 9.1<br>9<br>8.2<br>8.8<br>6.9<br>6.2<br>-<br>4 - 5.5 <sup>1</sup><br>$\leq$ 4 <sup>2</sup><br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>- | Sandy Clay<br>Sandy Clay<br>Sandy Clay<br>Sandy Clay<br>Sandy Clay<br>Clayey Sand<br>Eurofins LOR<br>Eurofins Eurofins Eurofins<br>Eurofins Eurofins Eurofins<br>Eurofins Eurofins Eurofins<br>Eurofins Eurofins Eurofins<br>Eurofins Eurofins Eurofins<br>Eurofins Eurofins Eurofins<br>Eurofins br>Eurofins Eurofins<br>Eurofins<br>Eurofins Eurofins<br>Eurofins<br>Eurofins<br>Eurofins Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins<br>Eurofins | N<br>N<br>N<br>N<br>N<br>N<br>N<br>N<br>dicator Value<br>cator Value<br>cator Value<br>s (1 - 1000 ton<br>ls (1 - 1000 ton<br>ls (1 - 1000 ton<br>ls (1 - 1000 ton<br>ls (>1000 ton<br>ls (>1000 ton<br>ls (>1000 ton<br>ls (>1000 ton<br>s (>1000 ton<br>s)<br>sult of some prev<br>fate soils are | 17/11/2018<br>17/11/2018<br>17/11/2018<br>17/11/2018<br>17/11/2018<br>17/11/2018<br>17/11/2018<br>17/11/2018<br>Value<br>Sulfate Soil India<br>- Coarse Soil:<br>- Medium Soi<br>- Fine Soils (<br>- Medium Soi<br>- M | 10.0-10.45<br>11.5-11.95<br>13.0-13.45<br>14.5-14.95<br>16.0-16.45<br>17.5-17.95<br><b>Guideline</b><br>otential Acid<br>ctual Acid Su<br>ction Criteria<br>ction crit | $\frac{-}{BH02_10.0-10.45}$ $\frac{-}{BH02_11.5-11.95}$ $\frac{-}{BH02_13.0-13.45}$ $\frac{-}{BH02_14.5-14.95}$ $\frac{-}{BH02_16.0-16.45}$ $\frac{-}{BH02_16.0-16.45}$ $\frac{-}{BH02_17.5-17.95}$ $\frac{-}{ASSMAC (1998) A}$ $\frac{-}$ |

8 - NT - Not Tested

9 - 1.0; No reaction to slight. 2.0; Moderate reaction. 3.0; Strong reaction with persistent froth. 4.0; Extreme reaction.

| Liming Rate: A Safety   | iming Rate: A Safety Factor of 1.5 has been incorporated to account for the mixing process  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|---|--|--|--|--|--|--|--|--|--|--|
| Acid Trail / Net Acidit | cid Trail / Net Acidity - Indicates acidic soils, however may not indicate Acid Sulfate Soils   |  |  |  |  |  |  |  |  |  |  |
| Contaminant Exceeda     | ance Indicators:  |  |  |  |  |  |  |  |  |  |  |
| Bold                    | Indicates the laboratory result is within the specified range of the ASSMAC (1998) Actual Acid Sulfate Soil Indicator Values                                    |  |  |  |  |  |  |  |  |  |  |
| Italics                 | Indicates the laboratory result either exceeds or is within the specified range of the ASSMAC (1998) Potential Acid Sulfate Soil Indicator Values               |  |  |  |  |  |  |  |  |  |  |
|                         | Indicates exceedance of the ASSMAC (1998) Action Criteria triggering the need to prepare a ASS Management Plan  |  |  |  |  |  |  |  |  |  |  |
|                         | Indicates the requirement for localised lime treatment of the material, that is, when the laboratory results for SCr (%w/w) > 0.03 and the SCr (mole H=/t) > 18 |  |  |  |  |  |  |  |  |  |  |

| Location  | Depth (m)  | Date  | Filling (F) /  | Material Type   | рН <sub>F</sub>   | рН <sub>FOX</sub>                     | рН <sub>F</sub> -<br>pH <sub>FOX</sub> | Reaction          | pH kcl                  | Peroxide<br>pH              | TPA            | TSA             | Peroxide<br>Oxidisable<br>Sulfur | Chromium<br>Reducible<br>Sulfur | Acid<br>Neutralising<br>Capacity | Acid<br>Trail       | Net<br>Acidity | Liming<br>rate |
|---|--|---|--|---|---|---------------------------------------|--|-------------------|-------------------------|-----------------------------|----------------|-----------------|----------------------------------|---------------------------------|----------------------------------|---------------------|----------------|----------------|
| Location  |  | Sampled   | Natural (N)  | Material Type   | pH units  | pH units                              | pH units                               | Rate              | pH units                | pH Units                    | mol H+/t       | mol H+/t        | %S                               | %S                              | %S                               | TAA<br>Mole<br>H+/t | %S             | kg<br>CaCO₃/t  |
| BH03_1.0-1.1  | 1.0-1.1  | 17/11/2018  | F  | Sand  | 6.4   | 5                                     | 1.4                                    | 1                 | -                       | -                           | -              | -               | -                                | -                               | -                                | -                   | -              | -              |
| BH03_2.5-2.95   | 2.5-2.95   | 17/11/2018  | Ν  | Sand  | 6.8   | 5                                     | 1.8                                    | 2                 | -                       | -                           | -              | -               | -                                | -                               | -                                | -                   | -              | -              |
| BH03_4.0-4.45   | 4.0-4.45   | 17/11/2018  | N  | Sand  | 9.3   | 7.4                                   | 1.9                                    | 1                 | -                       | -                           | -              | -               | -                                | -                               | -                                | -                   | -              | -              |
| BH03_5.5-5.95   | 5.5-5.95   | 17/11/2018  | N  | Sand  | 9.4   | 7.5                                   | 1.9                                    | 1                 | -                       | -                           | -              | -               | -                                | -                               | -                                | -                   | -              | -              |
| BH03_7.0-7.45   | 7.0-7.45   | 17/11/2018  | N  | Sand  | 9   | 7                                     | 2                                      | 2                 | -                       | -                           | -              | -               | -                                | -                               | -                                | -                   | -              | -              |
| BH03_8.5-8.95   | 8.5-8.95   | 17/11/2018  | N  | Sandy Clay  | 9.1   | 6.2                                   | 2.9                                    | 4                 | 9.3                     | 7.5                         | <2             | <2              | 0.35                             | 0.29                            | 1.00                             | <2                  | <0.02          | <1             |
| BH03_10.0-10.45   | 10.0-10.45   | 17/11/2018  | N  | Sandy Clay  | 8.9   | 2.3                                   | 6.6                                    | 4                 | 8.2                     | 2.6                         | 210            | 210             | 0.48                             | 0.35                            | 0.24                             | <2                  | 0.19           | 8.8            |
| BH03_11.5-11.95   | 11.5-11.95   | 17/11/2018  | N  | Sand  | 8.1   | 4.4                                   | 3.7                                    | 2                 | -                       | -                           | -              | -               | -                                | -                               | -                                | -                   | -              | -              |
| BH03_13.0-13.45   | 13.0-13.45   | 17/11/2018  | N  | Sand  | 8.3   | 6.1                                   | 2.2                                    | 2                 | -                       | -                           | -              | -               | -                                | -                               | -                                | -                   | -              | -              |
| BH04_0.5-0.95   | 0.5-0.95   | 10/11/2018  | F  | Sand  | 6.2   | 3.9                                   | 2.3                                    | 1                 | 6.7                     | 4.9                         | <2             | <2              | <0.02                            | <0.005                          | 0.09                             | <2                  | <0.02          | <1             |
| BH04_2.0-2.45   | 2.0-2.45   | 10/11/2018  | N  | Silty Sand  | 4.9   | 3.3                                   | 1.6                                    | 1                 | 5.7                     | 4.4                         | <2             | <2              | <0.02                            | <0.005                          | n/a                              | 3                   | <0.02          | <1             |
| BH04_3.0-3.45   | 3.0-3.45   | 10/11/2018  | N  | Silty Sand  | 5.5   | 3.4                                   | 2.1                                    | 1                 | -                       | -                           | -              | •               | -                                | -                               | -                                | -                   | -              | -              |
| BH05_1.5-1.95   | 1.5-1.95   | 10/11/2018  | N  | Silty Sand  | 5.6   | 3.5                                   | 2.1                                    | 1                 | 5.7                     | 4.9                         | <2             | <2              | <0.02                            | <0.005                          | n/a                              | 3                   | <0.02          | <1             |
| BH05_4.5-4.95   | 4.5-4.95   | 11/11/2018  | N  | Sand  | 6.5   | 5                                     | 1.5                                    | 1                 | -                       | -                           | -              | -               | -                                | -                               | -                                | -                   | -              | -              |
|   | Guideline  | Value   |  | Eurofins LOR  | -   | -                                     | -                                      | -                 | 0.1                     | 0.1                         | 2              | 2               | 0.02                             | 0.005                           | 0.02                             | 2                   | 0.02           | 1              |
| ASSMAC (1998) F   | Potential Acid   | Sulfate Soil Ir   | ndicator Value   |   | 4 - 5.5 <sup>1</sup>  | < 4 <sup>3</sup>                      | 1 <sup>4</sup>                         | -                 | -                       | -                           |                |                 |                                  | -                               | -                                | -                   | -              | -              |
| ASSMAC (1998) A   | Actual Acid Su   | Ifate Soil Indi   | cator Value  |   | ≤ 4 <sup>2</sup>  | -                                     | -                                      | -                 | -                       | -                           |                |                 |                                  | -                               | -                                | -                   | -              | -              |
| ASSMAC (1998) A   | Action Criteria  | - Coarse Soil   | ls (1 - 1000 to  | nnes) 5   | -   | -                                     | -                                      | -                 | -                       | -                           | 18             | 18              | 0.03                             | 0.03                            | -                                | 18                  | 0.03           | -              |
| ASSMAC (1998) A   | Action Criteria  | - Medium So   | ils (1 - 1000 to   | onnes) <sup>6</sup>   | -   | -                                     | -                                      | -                 | -                       | -                           | 36             | 36              | 0.06                             | 0.06                            | -                                | 36                  | 0.06           | -              |
| ASSMAC (1998) A   | Action Criteria  | - Fine Soils (  | 1 - 1000 tonne   | es) <sup>7</sup>  | -   | -                                     | -                                      | -                 | -                       | -                           | 62             | 62              | 0.10                             | 0.10                            | -                                | 62                  | 0.10           | -              |
| ASSMAC (1998) A   | Action Criteria  | - Coarse Soil   | ls (>1000 tonr   | nes) 5  | -   | -                                     | -                                      | -                 | -                       | -                           | 18             | 18              | 0.03                             | 0.03                            | -                                | 18                  | 0.03           | -              |
| ASSMAC (1998) A   | Action Criteria  | - Medium So   | ils (>1000 ton   | nes) <sup>6</sup>   | -   | -                                     | -                                      | -                 | -                       | -                           | 18             | 18              | 0.03                             | 0.03                            | -                                | 18                  | 0.03           | -              |
| ASSMAC (1998) A   | Action Criteria  | - Fine Soils (  | >1000 tonnes   | ) <sup>7</sup>  | -   | -                                     | -                                      | -                 | -                       | -                           | 18             | 18              | 0.03                             | 0.03                            | -                                | 18                  | 0.03           | -              |
| Notes to Table:   |  |   |  |   |   |                                       |  |                   |                         |                             |                |                 |                                  |                                 |                                  |                     |                |                |
| 1 - pH values >4 and  | d <5.5 are acid  | and may be the  | e result of some   | e previous or limited of  | oxidation of s  | ulfides, but is                       | not confirmat                          | tory of actual a  | cid sulfate s           | soils                       | tor            |                 |                                  |                                 |                                  |                     |                |                |
| 3 - The lower the fina<br>» If the $pH_{FOX} < 3$ an<br>» A $pH_{FOX}$ 3-4 is less<br>» For $pH_{FOX}$ 4-5 the f<br>» For $pH_{FOX} >5$ and I | al pH <sub>FOX</sub> value<br>d there was a s<br>positive and la<br>test is neither p<br>little or no drop | is, the better th<br>strong reaction<br>aboratory analy<br>positive nor neg<br>in pH from the | e indication of a<br>to the peroxide<br>rses are needed<br>ative. Sulfides<br>field value, littl | a positive result.<br>e, there is a high level<br>d to confirm if sulfides<br>may be present eithe<br>e net acid generating | l of certainty<br>s are present.<br>r in small qua<br>g ability is indi | of a potential antities and be cated. | acid sulfate s<br>e poorly react       | oils. The more    | the pH <sub>FOX</sub> d | lrops below 3<br>onditions. | , the more po  | ositive the pre | esence of sulfide                | S.                              |                                  |                     |                |                |
| 4 - If the pH <sub>F</sub> value is   | s at least one u   | nit below field   | pH <sub>FOX</sub> , it may ir  | dicate potential acid   | sulfate soils.  | The greater t                         | he difference                          | between the tw    | vo measure              | ements, the m               | nore indicativ | e the value is  | of a potential ad                | d sulfate soils.                |                                  |                     |                |                |
| 5 - coarse soils com<br>6 - Medium soils con<br>7 - Fine soils compris<br>8 - NT - Not Tested   | prise sands to I<br>nprise sandy lo<br>se medium to I  | oamy sands - A<br>ams to light cla<br>neavy clays and   | Approximate cla<br>ays - Approxima<br>d silty clays - Ap   | ay content (% < 0.002<br>ite clay content (% <<br>oproximate clay conte   | 2mm) ≤ 5%<br>0.002mm) be<br>ent (% < 0.002                              | etween 5 and<br>2mm) ≥ 40%            | 40%                                    |                   |                         |                             |                |                 |                                  |                                 |                                  |                     |                |                |
| 9 - 1.0; No reaction t  | o slight. 2.0; M   | oderate reactio   | on. 3.0; Strong i  | reaction with persiste  | ent froth. 4.0;   | Extreme reac                          | tion.                                  |                   |                         |                             |                |                 |                                  |                                 |                                  |                     |                |                |
| Liming Rate: A Safet  | ty Factor of 1.5   | has been inco   | rporated to acc  | ount for the mixing p   | rocess  |                                       |  |                   |                         |                             |                |                 |                                  |                                 |                                  |                     |                |                |
| Acid Trail / Net Acidi  | ty - Indicates a   | cidic soils, how  | vever may not ir   | ndicate Acid Sulfate S  | Soils   |                                       |  |                   |                         |                             |                |                 |                                  |                                 |                                  |                     |                |                |
| Contaminant Exceed  | dance Indicator  | <u>s:</u>   |  |   |   |                                       |  |                   |                         |                             |                |                 |                                  |                                 |                                  |                     |                |                |
| Bold  | Indicates the la   | aboratory resul   | t is within the s  | pecified range of the   | ASSMAC (19  | 998) Actual Ac                        | cid Sulfate Sc                         | il Indicator Val  | ues                     |                             |                |                 |                                  |                                 |                                  |                     |                |                |
| Italics   | Indicates the la   | aboratory resul   | t either exceeds   | s or is within the spec   | cified range o  | f the ASSMA                           | C (1998) Pote                          | ential Acid Sulfa | ate Soil Indi           | cator Values                |                |                 |                                  |                                 |                                  |                     |                |                |
|   | Indicates exce   | edance of the   | ASSMAC (1998   | <ol> <li>Action Criteria trigg</li> </ol>   | pering the nee  | ed to prepare                         | a ASS Mana                             | gement Plan       | 0.00                    |                             |                |                 |                                  |                                 |                                  |                     |                |                |
|   | Indicates the r  | equirement for  | localised lime f   | treatment of the mate   | erial, that is, v   | nen the labo                          | ratory results                         | tor SCr (%w/w)    | ) > 0.03 and            | the SCr (mo                 | oie H=/t) > 18 |                 |                                  |                                 |                                  |                     |                |                |



|   |         |         |              | BTEX           |            |            |              |         |           | ТРН       |         |                              |           |                            |                            |                  | M              | AH              |                    |   |
|---|---------|---------|--------------|----------------|------------|------------|--------------|---------|-----------|-----------|---------|------------------------------|-----------|----------------------------|----------------------------|------------------|----------------|-----------------|--------------------|---|
|   | Benzene | Toluene | Ethylbenzene | Xylene (m & p) | Xylene (o) | Total BTEX | Xylene Total | ce - c9 | C10 - C14 | C15 - C28 | C29-C36 | +C10 - C36 (Sum of<br>total) | Total MAH | 1,2,4-<br>trimethylbenzene | 1,3,5-<br>trimethylbenzene | lsopropylbenzene | n-butylbenzene | n-propylbenzene | p-isopropyltoluene |   |
|   | mg/kg   | mg/kg   | mg/kg        | mg/kg          | mg/kg      | mg/kg      | mg/kg        | mg/kg   | mg/kg     | mg/kg     | mg/kg   | mg/kg                        | mg/kg     | mg/kg                      | mg/kg                      | mg/kg            | mg/kg          | mg/kg           | mg/kg              | 1 |
| EQL   | 0.1     | 0.1     | 0.1          | 0.2            | 0.1        | 0.2        | 0.3          | 10      | 20        | 50        | 50      | 50                           | 0.5       | 0.5                        | 0.5                        | 0.5              | 0.5            | 0.5             | 0.5                |   |
| NSW 2014 General Solid Waste CT1 (No Leaching)    | 10      | 288     | 600          |                |            |            | 1,000        | 650     |           |           |         | 10,000                       |           |                            |                            |                  |                |                 |                    |   |
| NSW 2014 Restricted Solid Waste CT2 (No Leaching) | 40      | 1,152   | 2,400        |                |            |            | 4,000        | 2,600   |           |           |         | 40,000                       |           |                            |                            |                  |                |                 |                    |   |
| NSW 2014 General Solid Waste SCC1 (with leached)  | 18      | 518     | 1,080        |                |            |            | 1,800        | 6500    |           |           |         | 10,000                       |           |                            |                            |                  |                |                 |                    |   |

| Field ID              | Date       |      |      |      |      |      |      |       |     |     |             |       |       |      |      |      |      |      |      |          |          |
|-----------------------|------------|------|------|------|------|------|------|-------|-----|-----|-------------|-------|-------|------|------|------|------|------|------|----------|----------|
| ASB2                  | 17/11/2018 | -    | -    | -    | -    | -    | -    | -     | -   | -   | -           | -     | -     | -    | -    | -    | -    | -    | -    | -        | Г        |
| BH02 0.5              | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | < 0.3 | <20 | <20 | <50         | <50   | <50   | -    | -    | -    | -    | -    | -    | -        | T        |
| BH2 1.0               | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | < 0.3 | <20 | <20 | <50         | <50   | <50   | <0.5 | <0.5 | <0.5 | <0.5 | -    | -    | -        | t        |
| BH03 0.5              | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | < 0.3 | <20 | <20 | <50         | <50   | <50   | -    | -    | -    | -    | -    | -    | -        | t        |
| BH4 0.4               | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | 370         | 1,600 | 1,970 | -    | -    | -    | -    | -    | -    | -        | 1        |
| BH05_0.2-0.5          | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | <0.5 | <0.5 | <0.5 | <0.5 | -    | -    | <u> </u> | +        |
| TP01_0.2              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 |      | <0.3  | <20 | <20 | <50         | 62    | 62    |      |      |      |      |      | _    | <u> </u> | +        |
| TP01_0.2              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 |      | <0.3  | <20 | <20 | <50         | <50   | <50   |      | -    |      | -    |      | _    | <u> </u> | +        |
| TP02_0.1              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | _    | <0.3  | <20 | <20 | < <u>50</u> | 110   | 173   |      | _    | _    | _    | _    | _    |          | +        |
| TP02_0.1              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 |      | <0.3  | <20 | <20 | <50         | <50   | -50   |      |      |      |      |      | _    |          | +        |
| TP02_0.4              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | -    | -    | -    | -    | -    | -    |          | +        |
| TP03_0.2              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <30         | <50   | <50   | -    | -    | -    | -    | -    | -    |          | +        |
| TP03_1.2              | 10/11/2018 | ۷.1  | ۲0.1 | <0.1 | <0.2 | ۲0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | <0.5 | <0.5 | ۲0.5 | <0.5 | -    | -    |          | +        |
| TP03_ASB1             | 10/11/2018 | -    | -    | -    | -    | -    | -    | -     | -   | -   | -           | -     | -     | -    | -    | -    | -    | -    | -    |          | +        |
| TP04_0.1              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | -    | -    | -    | -    | -    | -    |          | _        |
| 1P04_0.4              | 10/11/2018 | -    | -    | -    | -    | -    | -    | -     | -   | -   | -           | -     | -     | -    | -    | -    | -    | -    | -    |          | _        |
| TP05_0.1              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | -    | -    | -    | -    | -    | -    |          | _        |
| TP05_0.9              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | <0.5 | <0.5 | <0.5 | <0.5 | -    | -    |          | _        |
| TP06_0.1              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | 100         | 480   | 580   | -    | -    | -    | -    | -    | -    | -        | _        |
| TP06_0.3              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | <0.5 | <0.5 | <0.5 | <0.5 | -    | -    | -        | _        |
| TP07_0.1              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | -    | -    | -    | -    | -    | -    | -        |          |
| TP07_0.4              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | -    | -    | -    | -    | -    | -    | -        |          |
| TP07_0.6              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | -    | -    | -    | -    | -    | -    | -        |          |
| TP08_0.4              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | <0.5 | <0.5 | <0.5 | <0.5 | -    | -    | -        |          |
| TP09_0.3              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | -    | -    | -    | -    | -    | -    | -        | Τ        |
| TP10_0.1              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | 91    | 91    | -    | -    | -    | -    | -    | -    | -        |          |
| TP11_0.2              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | -    | -    | -    | -    | -    | -    | -        | Γ        |
| TP11_1.2              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | < 0.3 | <20 | <20 | 72          | 92    | 164   | <0.5 | <0.5 | <0.5 | <0.5 | -    | -    | -        | Γ        |
| TP12_0.2              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | -    | -    | -    | -    | -    | -    | -        | T        |
| TP13 0.1              | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | < 0.3 | <20 | <20 | 70          | 290   | 360   | <0.5 | <0.5 | <0.5 | <0.5 | -    | -    | -        | T        |
| TP13 0.4              | 17/11/2018 | -    | -    | -    | -    | -    | -    | -     | -   | -   | -           | -     | -     | -    | -    | -    | -    | -    | -    | -        | 1        |
| TP14 0.1              | 17/11/2018 | -    | -    | -    | -    | -    | -    | -     | -   | -   | -           | -     | -     | -    | -    | -    | -    | -    | -    | -        | t        |
| TP14 0.7              | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | < 0.3 | <20 | <20 | <50         | <50   | <50   | <0.5 | <0.5 | <0.5 | <0.5 | -    | -    | -        | t        |
| TP15 0.1              | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | -    | -    | -    | -    | -    | -    | -        | +        |
| TP15_0.6              | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | <0.5 | <0.5 | <0.5 | <0.5 | -    | -    | -        | +        |
| TP16_0.1              | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | _    | <0.3  | <20 | <20 | <50         | <50   | <50   | -    | -    | -    | -    | -    | _    |          | +        |
| TP16_0.8              | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.5  | <20 | <20 | <50         | <50   | <50   | <0.5 | <0.5 | <0.5 | <0.5 | -    | -    | <u> </u> | +        |
| TP17_0.1              | 17/11/2018 |      |      |      |      |      |      |       | 120 | 120 |             | -     |       |      |      |      |      |      | _    | <u> </u> | +        |
| TP17_0.5              | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 |      | <03   | <20 | <20 | <50         | <50   | <50   | <0.5 | <0.5 | <0.5 | <0.5 |      | _    | <u> </u> | +        |
| TP18 0 1              | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | _    | <0.3  | <20 | <20 | <50         | <50   | <50   | <0.5 | <0.5 | <0.5 | <0.5 | _    | _    |          | +        |
| TD18 0 4              | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 |      | <0.3  | <20 | <20 | <50         | <50   | <50   | <0.5 | <0.5 | <0.5 | <0.5 |      | _    |          | +        |
| TP10_0.4              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | _    | <0.3  | <20 | <20 | <50         | <50   | <50   | <0.5 | <0.5 | <0.5 | <0.5 |      | _    |          | +        |
| TP10_0.2              | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | _    | <0.3  | <20 | <20 | <50         | <50   | <50   |      | _    |      | _    |      | _    |          | +        |
| TP19_0.5              | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | -    | -    | -    |      | -    | -    |          | +        |
| 00100                 | 17/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | -    | -    | -    | -    | -    | -    |          | +        |
| QA100                 | 10/11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | ×0.1 | -    | <0.3  | <20 | <20 | ₹50<br><100 | <50   | <50   | <0.5 | <0.5 | <0.5 | <0.5 | -    | -    | -        | +        |
| QA200                 | 10/11/2018 | <0.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.2 | <0.5  | <10 | <50 | <100        | <100  | <50   | -    | <0.5 | ۲0.5 | <0.5 | <0.5 | <0.5 | <0.5     | +        |
| QA300                 | 1//11/2018 | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | -    | <0.3  | <20 | <20 | <50         | <50   | <50   | -    | -    | -    | -    | -    | -    |          | _        |
| QA400                 | 17/11/2018 | <0.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.2 | <0.5  | <10 | <50 | <100        | <100  | <50   | -    | -    | -    | -    | -    | -    |          | _        |
| Statistics            |            |      |      |      |      |      |      |       |     |     |             |       |       |      |      |      |      |      |      |          |          |
| Number of Results     |            | 43   | 43   | 43   | 43   | 43   | 2    | 43    | 41  | 41  | 41          | 41    | 41    | 14   | 15   | 15   | 15   | 1    | 1    | 1        | Т        |
| Minimum Concentration | 1          | <0.1 | <0.1 | <0.1 | <0.2 | <0.1 | <0.2 | <0.3  | <10 | <20 | <50         | <50   | <50   | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | ┢        |
| Maximum Concentratio  | n          | 83   | 82   | 82   | 83   | 84   | <0.2 | 84    | <20 | <50 | 370         | 1,600 | 1,970 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5     | t        |
| Average Concentration | *          | 2    | 2    | 2    | 2    | 2    | 0.1  | 2.1   | 9.8 | 11  | 40          | 88    | 104   | 0,25 | 0,25 | 0,25 | 0,25 |      |      |          | $\vdash$ |
| Standard Deviation *  |            | 13   | 12   | 12   | 13   | 13   | 0    | 13    | 1.1 | 3.3 | 55          | 256   | 316   | 0    | 0    | 0    | 0    |      |      | <u> </u> | ┢        |
|                       |            | -    |      |      | -    | -    | -    | -     |     | -   |             |       |       | -    | -    |      | -    |      |      | <u> </u> | <u> </u> |

Average Concentration \*
Standard Deviation \*
\* A Non Detect Multiplier of 0.5 has been applied.

| sec-butylbenzene | Styrene  | tert-butylbenzene |
|------------------|----------|-------------------|
| ng/kg            | mg/kg    | mg/kg             |
| 0.5              | 0.5      | 0.5               |
|                  | 60       |                   |
|                  | 240      |                   |
|                  | 108      |                   |
|                  | -        |                   |
| -                | -        | -                 |
| -                | -        | -                 |
| -                | <0.5     | -                 |
| -                | -        | -                 |
| -                | -        | -                 |
| -                | <0.5     | -                 |
| -                | -        | -                 |
| -                | -        | -                 |
| -                | -        | -                 |
| -                | -        | -                 |
| -                | -        | -                 |
| -                | <0.5     | -                 |
| -                | -        | -                 |
| -                | -        | -                 |
| -                | -        | -                 |
| -                | -        | -                 |
| -                | <0.5     | -                 |
| -                | -        | -                 |
| -                | <0.5     | -                 |
| -                | -        | -                 |
| -                | -        | -                 |
| -                | -        | -                 |
| -                | <0.5     | -                 |
| -                | -        | -                 |
| -                | -        | -                 |
| -                | -        | -                 |
| -                | <0.5     | -                 |
| -                | -        | -                 |
| -                | <0.5     | -                 |
| -                | -        | -                 |
| -                | -        | -                 |
| -                | <0.5     | -                 |
| -                | - <0.5   | -                 |
| _                | <0.5     | _                 |
| -                | <0.5     | _                 |
| _                | <0.5     | _                 |
|                  | <0.5     | _                 |
| -                | <0.5     | _                 |
| -                | <05      | -                 |
| _                | -0.5     | -                 |
| -                | -        | -                 |
| -                |          |                   |
| -                |          | -                 |
| -                | <0.5     |                   |
| ~0.5             | ~U.5     | <u>\</u> 0.5      |
| -                | -        | -                 |
| -                | <u> </u> | -                 |
|                  |          |                   |

| 1    | 15   | 1    |
|------|------|------|
| <0.5 | <0.5 | <0.5 |
| <0.5 | <0.5 | <0.5 |
|      | 0.25 |      |
|      | 0    |      |



|                           |                           |                |                    | r                                       |                                      |   |                |              |                        |                | P                    | AH<br>au            |            |                             |              |   |                           |             |                     |              |           |                                | Asbestos           | r                           |
|---------------------------|---------------------------|----------------|--------------------|---|--------------------------------------|---|----------------|--------------|------------------------|----------------|----------------------|---------------------|------------|-----------------------------|--------------|---|---------------------------|-------------|---------------------|--------------|-----------|--------------------------------|--------------------|-----------------------------|
|                           |                           | BaP TEQ (zero) | Benzo(a)pyrene TEQ | S Benzo(a)pyrene TEQ<br>(upper bound) * | 8<br>Benzo(b+j)fluoranthe<br>6<br>ne | Acenaphthene  | Acenaphthylene | Anthracene   | 8<br>Benz(a)anthracene | Benzo(a)pyrene | Benzo(g,h,i)perylene | Benzo(k)fluoranthen | Chrysene   | bibenz(a,h)anthracen<br>중 e | Eluoranthene | Eluorene  | deno(1,2,3-<br>c,d)pyrene | Maphthalene | PAHs (Sum of total) | Phenanthrene | by Pyrene | Åsbestos from ACM<br>는 in Soil | Asbestos from FA & | Asbestos Reported<br>Result |
| EQL                       |                           | 0.5            | 0.5                | NIG/KG                                  | 0.5                                  | 0.5   | 0.5            | 0.5          | 0.5                    | 0.5            | 0.5                  | 0.5                 | 0.5        | 0.5                         | 0.5          | 0.5   | 0.5                       | 0.5         | 0.5                 | 0.5          | 0.5       | 70VV / VV                      | /8 <b>VV/ VV</b>   | comment                     |
| NSW 2014 General Solid W  | Vaste CT1 (No Leaching)   |                |                    |   |                                      |   |                |              |                        | 0.8            |                      |                     |            |                             |              |   |                           |             | 200                 |              |           |                                |                    |                             |
| NSW 2014 Restricted Solic | Waste CT2 (No Leaching)   |                |                    |   |                                      |   |                |              |                        | 3.2            |                      |                     |            |                             |              |   |                           |             | 800                 |              |           |                                |                    |                             |
| NSW 2014 General Solid V  | Vaste SCC1 (with leached) |                |                    |   |                                      |   |                |              |                        | 10             |                      |                     |            |                             |              |   |                           |             |                     |              |           |                                |                    |                             |
| Field ID                  | Date                      |                |                    |   |                                      |   |                |              |                        |                |                      |                     |            |                             |              |   |                           |             |                     |              |           |                                |                    |                             |
| ASB2                      | 17/11/2018                | -              | -                  | -                                       | -                                    | -   | -              | -            | -                      | -              | -                    | -                   | -          | -                           | -            | -   | -                         | -           | -                   | -            | -         | -                              | -                  | Y                           |
| BH02_0.5                  | 17/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | <0.001                         | <0.001             | N                           |
| BH2_1.0<br>BH03_0.5       | 17/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | <0.001                         | <0.001             | N                           |
| BH4 0.4                   | 10/11/2018                | 1.0            | 1.3                | 1.7                                     | 0.6                                  | <0.5  | <0.5           | <0.5         | <0.5                   | 0.9            | <0.5                 | 0.8                 | <0.5       | <0.5                        | 0.6          | <0.5  | <0.5                      | <0.5        | 3.4                 | <0.5         | 0.5       | -                              | -                  | -                           |
| BH05_0.2-0.5              | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | -                              | -                  | -                           |
| TP01_0.2                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | <0.001                         | <0.001             | N                           |
| TP01_0.9                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | -                              | -                  | -                           |
| TP02_0.1                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | < 0.001                        | <0.001             | N                           |
| TP02_0.4                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | <0.001                         | <0.001             | N                           |
| TP03_0.2                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | <0.001                         | <0.001             | N                           |
| TP03 ASB1                 | 10/11/2018                | -              | -                  |   | -                                    | -   | -              | -            | -                      | -              | -                    | -                   | -          | -                           | -            | -   | -                         | -           | -                   | -            | -         | -                              | -                  | Y                           |
| TP04_0.1                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | <0.001                         | < 0.001            | N                           |
| TP04_0.4                  | 10/11/2018                | -              | -                  | -                                       | -                                    | -   | -              | -            | -                      | -              | -                    | -                   | -          | -                           | -            | -   | -                         | -           | -                   | -            | -         | 0.1908                         | <0.001             | Y                           |
| TP05_0.1                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | <0.001                         | <0.001             | N                           |
| TP05_0.9                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | -                              | -                  | -                           |
| TP06_0.1                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | <0.001                         | <0.001             | N                           |
| TP06_0.3                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | -                              | -                  | -<br>N                      |
| TP07_0.4                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      |                                | -                  | -                           |
| TP07_0.6                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | -                              | -                  | -                           |
| TP08_0.4                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | -                              | -                  | -                           |
| TP09_0.3                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | <0.001                         | <0.001             | N                           |
| TP10_0.1                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | -                              | -                  |                             |
| TP11_0.2                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | < 0.5                  | < 0.5          | < 0.5                | < 0.5               | < 0.5      | < 0.5                       | < 0.5        | <0.5  | <0.5                      | <0.5        | < 0.5               | < 0.5        | < 0.5     | <0.001                         | <0.001             | N                           |
| TP11_1.2                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | -                              | -                  | -<br>N                      |
| TP12_0.2                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | <0.001                         | <0.001             | N                           |
| TP13 0.4                  | 17/11/2018                | -              | -                  | -                                       | -                                    | -   | -              | -            | -                      | -              | -                    | -                   | -          | -                           | -            | -   | -                         | -           | -                   | -            | -         | <0.001                         | <0.001             | N                           |
| TP14_0.1                  | 17/11/2018                | -              | -                  | -                                       | -                                    | -   | -              | -            | -                      | -              | -                    | -                   | -          | -                           | -            | -   | -                         | -           | -                   | -            | -         | < 0.001                        | < 0.001            | N                           |
| TP14_0.7                  | 17/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | -                              | -                  | -                           |
| TP15_0.1                  | 17/11/2018                | 0.9            | 1.2                | 1.5                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | 1.1                    | 0.7            | <0.5                 | 0.7                 | 1.0        | <0.5                        | 1.3          | <0.5  | <0.5                      | <0.5        | 6.9                 | 0.8          | 1.3       | -                              | -                  | -                           |
| TP15_0.6                  | 17/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | -                              | -                  |                             |
| TP16_0.1                  | 1//11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | < 0.5          | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | < 0.5        | <0.5      |                                | -                  | -                           |
| TP17_0.0                  | 17/11/2018                | <0.5           | 0.0                | 1.2                                     | <0.5                                 | <u.5< td=""><td>&lt;0.5</td><td>&lt;0.5</td><td>&lt;0.5</td><td>&lt;0.5</td><td>&lt;0.5</td><td>&lt;0.5</td><td>&lt;0.5<br/>-</td><td>&lt;0.5</td><td>&lt;0.5</td><td><u.5< td=""><td>&lt;0.5</td><td>&lt;0.5</td><td>&lt;0.5</td><td>&lt;0.5</td><td>&lt;0.5</td><td>-<br/>&lt;0.001</td><td>-<br/>&lt;0.001</td><td>N</td></u.5<></td></u.5<> | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5<br>-  | <0.5                        | <0.5         | <u.5< td=""><td>&lt;0.5</td><td>&lt;0.5</td><td>&lt;0.5</td><td>&lt;0.5</td><td>&lt;0.5</td><td>-<br/>&lt;0.001</td><td>-<br/>&lt;0.001</td><td>N</td></u.5<> | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | -<br><0.001                    | -<br><0.001        | N                           |
| TP17 0.5                  | 17/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | < 0.5                | <0.5                | < 0.5      | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | < 0.5               | <0.5         | < 0.5     | -0.001                         |                    |                             |
| TP18_0.1                  | 17/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | <0.001                         | <0.001             | N                           |
| <br>TP18_0.4              | 17/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      |                                | -                  | -                           |
| TP19_0.1                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | <0.001                         | <0.001             | N                           |
| TP19_0.3                  | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | <0.001                         | <0.001             | N                           |
| TP20_0.1                  | 17/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | < 0.5                | <0.5                | < 0.5      | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | <0.001                         | <0.001             | N                           |
| QA100<br>QA200            | 10/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5<br>20 5 | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      |                                | -                  | -                           |
| QA300                     | 17/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      |                                | -                  | -                           |
| QA400                     | 17/11/2018                | <0.5           | 0.6                | 1.2                                     | <0.5                                 | <0.5  | <0.5           | <0.5         | <0.5                   | <0.5           | <0.5                 | <0.5                | <0.5       | <0.5                        | <0.5         | <0.5  | <0.5                      | <0.5        | <0.5                | <0.5         | <0.5      | -                              | -                  | -                           |
| u                         |                           |                | •                  |   |                                      |   |                |              |                        |                |                      |                     |            |                             |              |   |                           | •           |                     |              |           |                                |                    | I                           |
| Statistics                |                           | 44             | 44                 | 20                                      | 44                                   | 44  | 44             | 44           | 44                     | A4             | 44                   | 44                  | 44         | 44                          | 44           | 44  | 44                        | 03          | 44                  | 44           | 44        | 25                             | 25                 | 25                          |
| Minimum Concentration     |                           | 41<br>20 E     | 41                 | 1 2                                     | 41<br>20 E                           | 41<br>20 E  | 41<br>20 E     | 41<br>20 E   | 41<br>70 E             | 41<br>70 E     | 41<br>20 E           | 41                  | 41<br>20 E | 41                          | 41<br>20 E   | 41<br>20 E  | 41<br>20 E                | 03<br>20 E  | 41                  | 41           | 41        | 25<br>0                        | 25<br>0            | 25<br>1                     |
| Maximum Concentration     |                           | 1              | 1.2                | 1.2                                     | 0.5                                  | <0.5  | <0.5<br>20 E   | <0.5<br><0 E | 1 1                    | 0.0            | <0.5<br>20 E         | 0.0                 | 1          | <0.5<br><0.5                | 12           | <0.5<br><0.5  | <0.5<br>20 E              | <0.5        | 6.0                 | 0.0          | 1.2       | 0 1009                         | 0                  | 1                           |
| Average Concentration *   |                           | 0.28           | 0.62               | 1.7                                     | 0.0                                  | 0.5   | 0.5            | 0.5          | 0.27                   | 0.5            | 0.5                  | 0.0                 | 0.27       | 0.5                         | 0.28         | 0.5   | 0.5                       | 0.26        | 0.5                 | 0.0          | 0.28      | 0.0076                         | 0                  | 1                           |
| Standard Deviation *      |                           | 0.15           | 0,14               | 0.092                                   | 0.055                                | 0   | 0              | 0            | 0.13                   | 0.12           | 0                    | 0.11                | 0.12       | 0.25                        | 0.17         | 0.25  | 0                         | 0.032       | 1.1                 | 0.086        | 0.20      | 0.038                          | 0                  | 0                           |
| * A Non Detect Multiplier | of 0.5 has been applied   |                |                    |   |                                      |   | -              |              |                        |                | -                    |                     |            |                             |              |   | -                         |             |                     |              |           |                                |                    |                             |

| DWP   | Aus | tralia |
|-------|-----|--------|
| Kyeem | agh | NSW    |



|  |   |            |           |                     |            | Metals             |            |                     |              |            |                               | VOCs              |                       | SVOCs        |                               |                         |                               |                       |                      |                      |                       |   |                                 |                      |                                     |                       |
|--|---|------------|-----------|---------------------|------------|--------------------|------------|---------------------|--------------|------------|-------------------------------|-------------------|-----------------------|--------------|-------------------------------|-------------------------|-------------------------------|-----------------------|----------------------|----------------------|-----------------------|---|---------------------------------|----------------------|-------------------------------------|-----------------------|
|  |   | , Arsenic  | , Cadmium | , Chromium (III+VI) | , Copper   | <u>5</u>           | read       | , Mercury           | , Nickel     | , Zinc     | cis-1,4-Dichloro-2-<br>butene | Pentachloroethane | trans-1,4-Dichloro-2- | EPN          | 1,1,1,2-<br>tetrachloroethane | , 1,1,1-trichloroethane | 1,1,2,2-<br>tetrachloroethane | 1,1,2-trichloroethane | , 1,1-dichloroethane | , 1,1-dichloroethene | , 1,1-dichloropropene | 1,2,3-<br>trichloropropane  | 1,2-dibromo-3-<br>chloropropane | , 1,2-dichloroethane | , 1,2-dichloropropane               | , 1,3-dichloropropane |
| EQL  |   | mg/kg<br>2 | 0.4       | mg/kg<br>2          | mg/kg<br>5 | <b>mg/kg</b><br>20 | mg/kg<br>5 | <b>mg/kg</b><br>0.1 | mg/kg<br>2   | mg/kg<br>5 | mg/kg<br>0.5                  | mg/kg<br>0.5      | mg/kg<br>0.5          | mg/kg<br>0.2 | mg/kg<br>0.5                  | mg/kg<br>0.5            | mg/kg<br>0.5                  | mg/kg<br>0.5          | mg/kg<br>0.5         | 0.5                  | <b>mg/kg</b><br>0.5   | <b>mg/kg</b><br>0.5   | 0.5                             | mg/kg<br>0.5         | <b>mg/kg</b><br>0.5                 | mg/kg<br>0.5          |
| NSW 2014 General Solid                           | d Waste CT1 (No Leaching)                                   | 100        | 20        | 100                 |            |                    | 100        | 4                   | 40           |            |                               |                   |                       |              | 200                           | 600                     | 26                            | 24                    |                      | 14                   |                       |   |                                 | 10                   |                                     |                       |
| NSW 2014 Restricted So<br>NSW 2014 General Solid | blid Waste CT2 (No Leaching)<br>d Waste SCC1 (with leached) | 400<br>500 | 80<br>100 | 400                 |            |                    | 400        | 16<br>50            | 160<br>1,050 |            |                               |                   |                       |              | 800<br>360                    | 2,400<br>1,080          | 104<br>46.8                   | 96<br>43.2            |                      | 56<br>0.7            |                       |   |                                 | 40<br>0.5            |                                     |                       |
|  | Dete  | -          | •         |                     |            |                    |            |                     |              |            |                               |                   |                       |              |                               |                         |                               |                       |                      |                      | •                     | •   |                                 |                      |                                     |                       |
| ASB2   | 17/11/2018  | -          | -         | -                   | -          | -                  | -          | -                   | -            | -          | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| BH02_0.5   | 17/11/2018  | <2         | <0.4      | <5                  | <5         | -                  | 9.8        | <0.1                | <5           | 17         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| BH2_1.0  | 17/11/2018  | <2         | <0.4      | <5                  | 5.6        | -                  | 12         | <0.1                | <5           | 24         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                 | -                     | <0.5  | -                               | <0.5                 | <0.5                                | <0.5                  |
| вноз_0.5<br>ВН4 0.4                              | 10/11/2018  | <2         | <0.4      | <5                  | 11         | -                  | 13         | <0.1                | 13           | 25         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| <br>BH05_0.2-0.5                                 | 10/11/2018  | <2         | <0.4      | <5                  | <5         | -                  | <5         | <0.1                | <5           | <5         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                 | -                     | <0.5  | -                               | <0.5                 | <0.5                                | <0.5                  |
| TP01_0.2   | 10/11/2018  | <2         | <0.4      | 8.8                 | 27         | -                  | 19         | <0.1                | 15           | 44         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   |                       |
| TP01_0.9   | 10/11/2018  | <2         | <0.4      | <5<br>19            | <5         | -                  | 18         | <0.1                | <5<br>15     | 20         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| TP02_0.4   | 10/11/2018  | <2         | <0.4      | 10                  | 6.8        | -                  | 8.1        | <0.1                | 9.6          | 27         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| <br>TP03_0.2                                     | 10/11/2018  | <2         | <0.4      | <5                  | 6.6        | -                  | 19         | <0.1                | <5           | 35         | -                             | -                 | -                     | <0.2         | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| TP03_1.2   | 10/11/2018  | <2         | <0.4      | <5                  | <5         | -                  | 6.2        | <0.1                | <5           | 11         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                 | -                     | <0.5  | -                               | <0.5                 | <0.5                                | <0.5                  |
| TP03_ASB1  | 10/11/2018  | -          | -         | -<br>~F             | - 07       | -                  | - 20       | -                   | -<br>~F      | - 26       | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| TP04_0.1   | 10/11/2018  | -          | - <0.4    | -                   | - 8.7      | -                  |            | -                   | -            |            | -                             | -                 | -                     | <0.2<br>-    | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| TP05_0.1   | 10/11/2018  | <2         | <0.4      | <5                  | 5.2        | -                  | 23         | <0.1                | <5           | 23         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| TP05_0.9   | 10/11/2018  | <2         | <0.4      | <5                  | <5         | 360                | <5         | <0.1                | <5           | <5         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                 | -                     | <0.5  | -                               | <0.5                 | <0.5                                | <0.5                  |
| TP06_0.1   | 10/11/2018  | 2.8        | <0.4      | 130                 | 37         | -                  | 8.1        | <0.1                | 130          | 86         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| TP06_0.3   | 10/11/2018  | <2         | <0.4      | 13                  | 16         | -                  | 11         | <0.1                | 17           | 26         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                 | -                     | <0.5  | -                               | <0.5                 | <0.5                                | <0.5                  |
| TP07 0.4   | 10/11/2018  | <2         | <0.4      | <5                  | <5         | 1,500              | 11         | 0.2                 | <5           | 15         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| <br>TP07_0.6                                     | 10/11/2018  | <2         | <0.4      | <5                  | 13         | -                  | 9.0        | 0.7                 | <5           | 20         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| TP08_0.4   | 10/11/2018  | <2         | <0.4      | <5                  | <5         | -                  | 7.3        | <0.1                | <5           | 10         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                 | -                     | <0.5  | -                               | <0.5                 | <0.5                                | <0.5                  |
| TP09_0.3   | 10/11/2018  | <2         | <0.4      | <5                  | <5         | -                  | 10         | <0.1                | <5           | 14         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| TP10_0.1<br>TP11 0.2                             | 10/11/2018  | <2         | <0.4      | <5                  | <5         | -                  | <5         | <0.1                | <5           | <5         | -                             | -                 | -                     | < 0.2        | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| <br>TP11_1.2                                     | 10/11/2018  | <2         | <0.4      | <5                  | <5         | -                  | 19         | <0.1                | <5           | 12         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                 | -                     | <0.5  | -                               | <0.5                 | <0.5                                | <0.5                  |
| TP12_0.2   | 10/11/2018  | <2         | <0.4      | <5                  | <5         | 630                | 13         | <0.1                | <5           | 17         | -                             | -                 | -                     | <0.2         | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| TP13_0.1   | 17/11/2018  | <2         | <0.4      | 32                  | 12         | -                  | 11         | <0.1                | 30           | 40         | -                             | -                 | -                     | <0.2         | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                 | -                     | <0.5  | -                               | <0.5                 | <0.5                                | <0.5                  |
| TP13_0.4<br>TP14_0.1                             | 17/11/2018  | -          | -         | -                   | -          | -                  | -          | -                   | -            | -          | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| TP14_0.7   | 17/11/2018  | <2         | <0.4      | <5                  | <5         | -                  | <5         | <0.1                | <5           | <5         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                 | -                     | <0.5  | -                               | <0.5                 | <0.5                                | <0.5                  |
| TP15_0.1   | 17/11/2018  | <2         | <0.4      | <5                  | 16         | -                  | 65         | 0.1                 | <5           | 43         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| TP15_0.6   | 17/11/2018  | <2         | <0.4      | <5                  | <5         | -                  | <5         | <0.1                | <5           | 120        | -                             | -                 | -                     | <0.2         | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                 | -                     | <0.5  | -                               | <0.5                 | <0.5                                | <0.5                  |
| TP16_0.1   | 17/11/2018  | <2         | <0.4      | <5                  | <5         | -                  | 17         | <0.1                | <5           | 18         | -                             | -                 | -                     | -            | - <0.5                        | -                       | - <0.5                        | -                     | - <0.5               | - <0.5               | -                     | -   | -                               | -                    | -                                   | -                     |
| TP17 0.1   | 17/11/2018  | -          |           | -                   | -          | -                  | -          | -                   | -            | -          | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   |                       |
| <br>TP17_0.5                                     | 17/11/2018  | <2         | <0.4      | <5                  | <5         | -                  | <5         | <0.1                | <5           | <5         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                 | -                     | <0.5  | -                               | <0.5                 | <0.5                                | <0.5                  |
| TP18_0.1   | 17/11/2018  | <2         | <0.4      | <5                  | 11         | -                  | 56         | <0.1                | <5           | 130        | -                             | -                 | -                     | <0.2         | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| TP18_0.4   | 17/11/2018  | <2         | <0.4      | <5                  | <5         | -                  | <5         | <0.1                | <5           | <5         | -                             | -                 | -                     | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                 | -                     | <0.5  | -                               | <0.5                 | <0.5                                | <0.5                  |
| TP19_0.1<br>TP19_0.3                             | 10/11/2018  | <2         | <0.4      | <5                  | 10         | -                  | 10         | <0.1                | <5           | 29         | -                             | -                 | -                     | -            | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| TP20_0.1   | 17/11/2018  | <2         | <0.4      | 5.3                 | 12         | -                  | 42         | <0.1                | <5           | 66         | -                             | -                 | -                     | <0.2         | -                             | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               | -                    | -                                   | -                     |
| QA100  | 10/11/2018  | <2         | <0.4      | <5                  | 11         | -                  | 14         | <0.1                | <5           | 15         | -                             | -                 | -                     | <0.2         | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                 | -                     | <0.5  | -                               | <0.5                 | <0.5                                | <0.5                  |
| QA200  | 10/11/2018  | <5         | <1        | <2                  | <5         | -                  | 8          | <0.1                | <2           | 10         | <0.5                          | <0.5              | <0.5                  | -            | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                 | <0.5                  | <0.5  | <0.5                            | <0.5                 | <0.5                                | <0.5                  |
| QA300<br>OA400                                   | 17/11/2018  | <2<br><5   | <0.4      | <5<br><2            | 5.2        | -                  | 21         | <0.1                | <5<br><2     | 20         | -                             | -                 | -                     | -            |                               | -                       | -                             | -                     | -                    | -                    | -                     | -   | -                               |                      | -                                   | -                     |
| 1000 COLO 1000                                   | -// 11/2010   | ~5         | 1 1       |                     |            |                    | 1          | -0.1                | ~2           |            | u                             |                   |                       | 1            | U                             | 1                       |                               |                       |                      | -                    | 1                     |   |                                 | 1 -                  |                                     |                       |
| Statistics                                       |   |            |           |                     |            |                    |            |                     |              |            |                               |                   |                       |              | 1                             |                         |                               |                       |                      |                      |                       |   |                                 |                      |                                     |                       |
| Number of Results                                |   | 41         | 41        | 41                  | 41         | 3                  | 41         | 41                  | 41           | 41         | 1                             | 1                 | 1                     | 10           | 15                            | 15                      | 15                            | 15                    | 15                   | 15                   | 1                     | 15  | 1                               | 15                   | 15                                  | 15                    |
| Minimum Concentratio                             | n   | <2         | <0.4      | <2                  | 5          | 360                | <5         | 0.1                 | <2           | <5         | <0.5                          | <0.5              | <0.5                  | <0.2         | <0.5                          | <0.5                    | <0.5                          | <0.5                  | <0.5                 | <0.5                 | <0.5                  | <0.5  | <0.5                            | <0.5                 | <0.5                                | <0.5                  |
| Average Concentration                            | *   | <5<br>1 2  | <1        | 130                 | 3/         | 1,500              | 16         | 1.5                 | 130          | 130        | <0.5                          | <0.5              | <0.5                  | <0.2         | <0.5<br>0.25                  | <0.5<br>0.25            | <0.5<br>0.2F                  | <0.5<br>0.2F          | <0.5                 | <0.5                 | <0.5                  | <u.5< td=""><td>&lt;0.5</td><td>&lt;0.5</td><td><u.5< td=""><td>&lt;0.5</td></u.5<></td></u.5<> | <0.5                            | <0.5                 | <u.5< td=""><td>&lt;0.5</td></u.5<> | <0.5                  |
| Standard Deviation *                             |   | 0.47       | 0.065     | 20                  | 7.2        | 596                | 10         | 0.12                | 20           | 29         |                               |                   |                       | 0.1          | 0.25                          | 0.25                    | 0.25                          | 0.25                  | 0.25                 | 0.25                 |                       | 0.25  |                                 | 0.25                 | 0.25                                | 0.25                  |
| * A Non Detect Multipli                          | or of 0.5 bas been applied                                  |            | 2.000     |                     |            |                    |            | 0.20                |              |            | 1                             |                   | I                     | u •          |                               | . <u> </u>              |                               |                       |                      | . <u> </u>           | 1                     | -   |                                 | -                    | -                                   |                       |

# Cardno

|                           |                           |                  |                    | Chlorir            | nated Hydroc        | arbons                           |                      |                   |                     |                   |                                |                                 |                |                 |                          |                      |                          |                                  |       |                    |
|---------------------------|---------------------------|------------------|--------------------|--------------------|---------------------|----------------------------------|----------------------|-------------------|---------------------|-------------------|--------------------------------|---------------------------------|----------------|-----------------|--------------------------|----------------------|--------------------------|----------------------------------|-------|--------------------|
|                           |                           | 표<br>전<br>전<br>전 | Bromochloromethane | Bromodichlorometha | E mojomova<br>mg/kg | a<br>Karbon tetrachloride<br>کار | d Chlorodibromometha | M<br>Chloroethane | Chloroform<br>Ma/kg | May Chloromethane | 며 cis-1,2-<br>처 dichloroethene | 며 cis-1,3-<br>처 dichloropropene | Dibromomethane | Dichloromethane | M<br>Hexachlorobutadiene | m<br>Zrichloroethene | Martin Tetrachloroethene | 며 trans-1,2-<br>처 dichloroethene |       | Way Vinyl chloride |
| EQL                       |                           | 0.5              | 0.5                | 0.5                | 0.5                 | 0.5                              | 0.5                  | 0.5               | 0.5                 | 0.5               | 0.5                            | 0.5                             | 0.5            | 0.5             | 0.5                      | 0.5                  | 0.5                      | 0.5                              | 0.5   | 0.5                |
| NSW 2014 General Solid V  | Vaste CT1 (No Leaching)   |                  |                    |                    |                     | 10                               |                      |                   | 120                 |                   |                                |                                 |                | 172             |                          | 10                   | 14                       |                                  |       | 4                  |
| NSW 2014 Restricted Solid | d Waste CT2 (No Leaching) |                  |                    |                    |                     | 40                               |                      |                   | 480                 |                   |                                |                                 |                | 688             |                          | 40                   | 56                       |                                  |       | 16                 |
| NSW 2014 General Solid V  | Vaste SCC1 (with leached) |                  |                    |                    |                     | 18                               |                      |                   | 126                 |                   |                                |                                 |                | 8.6             |                          | 18                   | 25.2                     |                                  |       | 7.2                |
| Field ID                  | Date                      |                  |                    |                    |                     |                                  |                      |                   |                     |                   |                                |                                 |                |                 |                          |                      |                          |                                  |       |                    |
| ASB2                      | 17/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| BH02_0.5                  | 17/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| <br>BH2_1.0               | 17/11/2018                | -                | <0.5               | <0.5               | <0.5                | <0.5                             | <0.5                 | <0.5              | <0.5                | <0.5              | <0.5                           | <0.5                            | <0.5           | <0.5            | -                        | <0.5                 | <0.5                     | <0.5                             | <0.5  | <0.5               |
| BH03_0.5                  | 17/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| BH4_0.4                   | 10/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| BH05_0.2-0.5              | 10/11/2018                | -                | <0.5               | <0.5               | <0.5                | <0.5                             | <0.5                 | <0.5              | <0.5                | <0.5              | <0.5                           | <0.5                            | <0.5           | <0.5            | -                        | <0.5                 | <0.5                     | <0.5                             | <0.5  | <0.5               |
| TP01_0.2                  | 10/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| TP01_0.9                  | 10/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| 1P02_0.1                  | 10/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| 1P02_0.4                  | 10/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| TP03_0.2                  | 10/11/2018                | -                | - <0.5             | - <0.5             | - <0.5              | - <0.5                           |                      |                   |                     |                   | - <0.5                         | - <0.5                          | - <0.5         |                 | -                        |                      |                          | - <0.5                           |       | - <0.5             |
| TP03_1.2                  | 10/11/2018                |                  | -                  | -                  | -                   |                                  |                      | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        |                                  |       | -                  |
| TP04 0.1                  | 10/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| TP04 0.4                  | 10/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| <br>TP05_0.1              | 10/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| TP05_0.9                  | 10/11/2018                | -                | <0.5               | <0.5               | <0.5                | <0.5                             | <0.5                 | <0.5              | <0.5                | <0.5              | <0.5                           | <0.5                            | <0.5           | <0.5            | -                        | <0.5                 | <0.5                     | <0.5                             | <0.5  | <0.5               |
| TP06_0.1                  | 10/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| TP06_0.3                  | 10/11/2018                | -                | <0.5               | <0.5               | <0.5                | <0.5                             | <0.5                 | <0.5              | <0.5                | <0.5              | <0.5                           | <0.5                            | <0.5           | <0.5            | -                        | <0.5                 | <0.5                     | <0.5                             | <0.5  | <0.5               |
| TP07_0.1                  | 10/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| TP07_0.4                  | 10/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| TP07_0.6                  | 10/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| TP08_0.4                  | 10/11/2018                | -                | <0.5               | <0.5               | <0.5                | <0.5                             | <0.5                 | <0.5              | <0.5                | <0.5              | <0.5                           | <0.5                            | <0.5           | <0.5            | -                        | <0.5                 | <0.5                     | <0.5                             | <0.5  | <0.5               |
| TP09_0.3                  | 10/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| TP10_0.1                  | 10/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| TP11_0.2                  | 10/11/2018                | -                | <0.5               | <0.5               | <0.5                | <0.5                             | <0.5                 | <0.5              | <0.5                | <0.5              | <0.5                           | <0.5                            | <0.5           | <0.5            | -                        | <0.5                 | <0.5                     | <0.5                             | <0.5  | <0.5               |
| TP12 0.2                  | 10/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
|                           | 17/11/2018                | -                | <0.5               | <0.5               | <0.5                | <0.5                             | <0.5                 | <0.5              | <0.5                | <0.5              | <0.5                           | <0.5                            | <0.5           | <0.5            | -                        | <0.5                 | <0.5                     | <0.5                             | <0.5  | <0.5               |
| TP13_0.4                  | 17/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| TP14_0.1                  | 17/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| TP14_0.7                  | 17/11/2018                | -                | <0.5               | <0.5               | <0.5                | <0.5                             | <0.5                 | <0.5              | <0.5                | <0.5              | <0.5                           | <0.5                            | <0.5           | <0.5            | -                        | <0.5                 | <0.5                     | <0.5                             | <0.5  | <0.5               |
| TP15_0.1                  | 17/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| 1P15_0.6                  | 1//11/2018                | -                | <0.5               | <0.5               | <0.5                | <0.5                             | <0.5                 | <0.5              | <0.5                | <0.5              | <0.5                           | <0.5                            | <0.5           | <0.5            | -                        | <0.5                 | <0.5                     | <0.5                             | <0.5  | <0.5               |
| TP16_0.1                  | 17/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| TP17 0.1                  | 17/11/2018                | -                |                    |                    |                     |                                  |                      |                   |                     |                   |                                |                                 |                |                 | -                        |                      |                          |                                  |       |                    |
| TP17_0.5                  | 17/11/2018                | _                | <0.5               | <0.5               | <0.5                | <0.5                             | <0.5                 | <0.5              | <0.5                | <0.5              | <0.5                           | <0.5                            | <0.5           | <0.5            | -                        | <0.5                 | <0.5                     | <0.5                             | <0.5  | <0.5               |
| TP18_0.1                  | 17/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| <br>TP18_0.4              | 17/11/2018                | -                | <0.5               | <0.5               | <0.5                | <0.5                             | <0.5                 | <0.5              | <0.5                | <0.5              | <0.5                           | <0.5                            | <0.5           | <0.5            | -                        | <0.5                 | <0.5                     | <0.5                             | <0.5  | <0.5               |
| TP19_0.1                  | 10/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| TP19_0.3                  | 10/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| TP20_0.1                  | 17/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| QA100                     | 10/11/2018                | -                | <0.5               | <0.5               | < 0.5               | < 0.5                            | < 0.5                | <0.5              | < 0.5               | <0.5              | < 0.5                          | < 0.5                           | < 0.5          | <0.5            | -                        | < 0.5                | < 0.5                    | < 0.5                            | < 0.5 | <0.5               |
| QA200                     | 10/11/2018                | <0.5             | -                  | <0.5               | <0.5                | <0.5                             | <0.5                 | <5                | <0.5                | <5                | <0.5                           | <0.5                            | <0.5           | -               | <0.5                     | <0.5                 | <0.5                     | <0.5                             | <0.5  | <5                 |
| QA300                     | 17/11/2018                | -                | -                  | -                  | -                   | -                                | -                    | -                 | -                   | -                 | -                              | -                               | -              | -               | -                        | -                    | -                        | -                                | -     | -                  |
| L                         | 1/11/2010                 | -                | -                  | -                  | I -                 | -                                | -                    | I -               |                     | <u> </u>          | I -                            | I -                             | I -            | I -             | I -                      | I -                  |                          | I -                              | -     | -                  |
| Statistics                |                           |                  |                    |                    |                     |                                  |                      |                   |                     |                   |                                |                                 |                |                 |                          |                      |                          |                                  |       |                    |
| Number of Results         |                           | 1                | 14                 | 15                 | 15                  | 15                               | 15                   | 15                | 15                  | 15                | 15                             | 15                              | 15             | 14              | 1                        | 15                   | 15                       | 15                               | 15    | 15                 |
| Minimum Concentration     |                           | <0.5             | <0.5               | <0.5               | <0.5                | <0.5                             | <0.5                 | <0.5              | <0.5                | <0.5              | <0.5                           | <0.5                            | <0.5           | <0.5            | <0.5                     | <0.5                 | <0.5                     | <0.5                             | <0.5  | <0.5               |
| Maximum Concentration     |                           | <0.5             | <0.5               | <0.5               | <0.5                | <0.5                             | <0.5                 | <5                | <0.5                | <5                | <0.5                           | <0.5                            | <0.5           | <0.5            | <0.5                     | <0.5                 | <0.5                     | <0.5                             | <0.5  | <5                 |
| Average Concentration *   |                           |                  | 0.25               | 0.25               | 0.25                | 0.25                             | 0.25                 | 0.4               | 0.25                | 0.4               | 0.25                           | 0.25                            | 0.25           | 0.25            | Ì                        | 0.25                 | 0.25                     | 0.25                             | 0.25  | 0.4                |
| Standard Deviation *      |                           |                  | 0                  | 0                  | 0                   | 0                                | 0                    | 0.58              | 0                   | 0.58              | 0                              | 0                               | 0              | 0               |                          | 0                    | 0                        | 0                                | 0     | 0.58               |
| * A Non Dotoct Multiplion | of O E has been applied   | •                |                    |                    | •                   |                                  |                      |                   | •                   | •                 |                                | •                               | •              |                 |                          |                      | •                        |                                  |       |                    |

on Detect Multiplier of 0.5 has been applied

DWP Australia Kyeemagh NSW



|                           |                           |                            |                            |                     |                     |                       |                       | Jalogonatod       | Hydrocarbon     | c            |              |               |                           |             |                           |         |       |        |                   |         |           |                   |                     |        |
|---------------------------|---------------------------|----------------------------|----------------------------|---------------------|---------------------|-----------------------|-----------------------|-------------------|-----------------|--------------|--------------|---------------|---------------------------|-------------|---------------------------|---------|-------|--------|-------------------|---------|-----------|-------------------|---------------------|--------|
|                           |                           |                            |                            |                     | a                   | a                     | ı<br>م                | laiogenated       | Hydrocarbon     | 5            |              |               | ŧ                         |             | pa                        |         |       |        |                   |         |           |                   |                     |        |
|                           |                           | 1,2,3-<br>trichlorobenzene | 1,2,4-<br>trichlorobenzene | , 1,2-dibromoethane | 1,2-dichlorobenzene | , 1,3-dichlorobenzene | , 1,4-dichlorobenzene | , 2-chlorotoluene | 4-chlorotoluene | Bromobenzene | Bromomethane | Chlorobenzene | Dichlorodifluorome<br>ane | lodomethane | Trichlorofluorometh<br>ne | 4,4-DDE | a-BHC | Aldrin | Aldrin + Dieldrin | P-BHC   | Chlordane | , Chlordane (cis) | , Chlordane (trans) | d-BHC  |
| 501                       |                           | mg/kg                      | mg/kg                      | mg/kg               | mg/kg               | mg/kg                 | mg/kg                 | mg/kg             | mg/kg           | mg/kg        | mg/kg        | mg/kg         | mg/kg                     | mg/kg       | mg/kg                     | mg/kg   | mg/kg | mg/kg  | mg/kg             | mg/kg   | mg/kg     | mg/kg             | mg/kg               | mg/kg  |
| NSW 2014 General Solid    | Waste CT1 (No Leaching)   | 0.5                        | 0.5                        | 0.5                 | 86                  | 0.5                   | 150                   | 0.5               | 0.5             | 0.5          | 0.5          | 2 000         | 0.5                       | 0.5         | 0.5                       | 0.05    | 0.03  | 0.05   | 0.05              | 0.05    | 0.05      | 0.03              | 0.05                | 0.05   |
| NSW 2014 Restricted Soli  | d Waste CT2 (No Leaching) |                            |                            |                     | 344                 |                       | 600                   |                   |                 |              |              | 8,000         |                           |             |                           |         |       |        |                   |         |           |                   |                     |        |
| NSW 2014 General Solid    | Waste SCC1 (with leached) |                            |                            |                     | 4.3                 |                       | 7.5                   |                   |                 |              |              | 3,600         |                           |             |                           |         |       |        |                   |         |           |                   |                     |        |
| Field ID                  | Date                      |                            |                            |                     |                     |                       |                       |                   |                 |              |              |               |                           |             |                           |         |       |        |                   |         |           |                   |                     |        |
| ASB2                      | 17/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| BH02_0.5                  | 17/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| BH2_1.0                   | 17/11/2018                | -                          | -                          | <0.5                | <0.5                | <0.5                  | <0.5                  | -                 | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                      | <0.5        | <0.5                      | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| BH05_0.5                  | 10/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| BH05 0.2-0.5              | 10/11/2018                | -                          | -                          | <0.5                | <0.5                | <0.5                  | <0.5                  | -                 | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                      | <0.5        | <0.5                      | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP01_0.2                  | 10/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP01_0.9                  | 10/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP02_0.1                  | 10/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | 0.06    | <0.05 | <0.05  | 0.64              | <0.05   | 0.7       | -                 | -                   | <0.05  |
| TP02_0.4                  | 10/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   |        |
| TP03_0.2                  | 10/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | <0.05   | <0.05 | <0.05  | <0.05             | <0.05   | <0.1      | -                 | -                   | <0.05  |
| TP03_1.2                  | 10/11/2018                | -                          | -                          |                     |                     |                       | -                     | -                 | -               |              | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP04 0.1                  | 10/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | _                         | -           | -                         | < 0.05  | <0.05 | < 0.05 | < 0.05            | <0.05   | <0.1      | -                 | -                   | < 0.05 |
| TP04_0.4                  | 10/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP05_0.1                  | 10/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP05_0.9                  | 10/11/2018                | -                          | -                          | <0.5                | <0.5                | <0.5                  | <0.5                  | -                 | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                      | <0.5        | <0.5                      | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP06_0.1                  | 10/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   |        |
| TP06_0.3                  | 10/11/2018                | -                          | -                          | <0.5                | <0.5                | <0.5                  | <0.5                  | -                 | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                      | <0.5        | <0.5                      | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP07_0.1                  | 10/11/2018                | -                          | -                          |                     |                     | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP07 0.6                  | 10/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
|                           | 10/11/2018                | -                          | -                          | <0.5                | <0.5                | <0.5                  | <0.5                  | -                 | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                      | <0.5        | <0.5                      | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP09_0.3                  | 10/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP10_0.1                  | 10/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   |        |
| TP11_0.2                  | 10/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | <0.05   | <0.05 | <0.05  | <0.05             | <0.05   | <0.1      | -                 | -                   | <0.05  |
| TP11_1.2                  | 10/11/2018                | -                          | -                          | <0.5                | <0.5                | <0.5                  | <0.5                  | -                 | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                      | <0.5        | <0.5                      | - <0.05 | -     | -      | -                 | - <0.05 | -         | -                 | -                   |        |
| TP13 0.1                  | 17/11/2018                | _                          | -                          | <0.5                | <0.5                | <0.5                  | <0.5                  | _                 | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                      | <0.5        | <0.5                      | <0.05   | <0.05 | <0.05  | <0.05             | <0.05   | <0.1      | _                 | _                   | <0.05  |
| TP13_0.4                  | 17/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP14_0.1                  | 17/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP14_0.7                  | 17/11/2018                | -                          | -                          | <0.5                | <0.5                | <0.5                  | <0.5                  | -                 | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                      | <0.5        | <0.5                      | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP15_0.1                  | 17/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP15_0.6                  | 17/11/2018                | -                          | -                          | <0.5                | <0.5                | <0.5                  | <0.5                  | -                 | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                      | <0.5        | <0.5                      | <0.05   | <0.05 | <0.05  | <0.05             | <0.05   | <0.1      | -                 | -                   | <0.05  |
| TP16_0.1                  | 17/11/2018                | -                          | -                          | <0.5                | <0.5                | <0.5                  | - <0 5                | -                 | - <0 5          | <0.5         | - <0.5       | - <0.5        | - <0 5                    | <0.5        | - <0 5                    | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP17 0.1                  | 17/11/2018                | -                          | -                          | -                   |                     |                       |                       | -                 | -               | -            |              | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP17_0.5                  | 17/11/2018                | -                          | -                          | <0.5                | <0.5                | <0.5                  | <0.5                  | -                 | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                      | <0.5        | <0.5                      | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP18_0.1                  | 17/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | <0.05   | <0.05 | <0.05  | 0.05              | <0.05   | <0.1      | -                 | -                   | <0.05  |
| TP18_0.4                  | 17/11/2018                | -                          | -                          | <0.5                | <0.5                | <0.5                  | <0.5                  | -                 | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                      | <0.5        | <0.5                      | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP19_0.1                  | 10/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| TP19_0.3                  | 10/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         |         | -     | -      |                   | - <0.05 | - <0.1    | -                 | -                   |        |
| OA100                     | 10/11/2018                | -                          | -                          | < 0.5               | <0.5                | <0.5                  | <0.5                  | -                 | < 0.5           | <0.5         | < 0.5        | <0.5          | <0.5                      | <0.5        | < 0.5                     | <0.05   | <0.05 | <0.05  | <0.05             | <0.05   | <0.1      | -                 | -                   | <0.05  |
| QA200                     | 10/11/2018                | <0.5                       | <0.5                       | <0.5                | <0.5                | <0.5                  | <0.5                  | <0.5              | <0.5            | <0.5         | <5           | <0.5          | <5                        | <0.5        | <5                        | <0.05   | <0.05 | <0.05  | < 0.05            | < 0.05  | < 0.05    | <0.05             | <0.05               | < 0.05 |
| QA300                     | 17/11/2018                |                            | <u> </u>                   | -                   | -                   | -                     |                       |                   |                 |              | -            | -             | -                         | -           |                           |         |       | -      |                   | -       |           |                   | -                   | -      |
| QA400                     | 17/11/2018                | -                          | -                          | -                   | -                   | -                     | -                     | -                 | -               | -            | -            | -             | -                         | -           | -                         | -       | -     | -      | -                 | -       | -         | -                 | -                   | -      |
| Statistics                |                           |                            |                            |                     |                     |                       |                       |                   |                 |              |              |               |                           |             |                           |         |       |        |                   |         |           |                   |                     |        |
| Number of Results         |                           | 1                          | 1                          | 15                  | 15                  | 15                    | 15                    | 1                 | 15              | 15           | 15           | 15            | 15                        | 15          | 15                        | 11      | 11    | 11     | 11                | 11      | 11        | 1                 | 1                   | 11     |
| Minimum Concentration     |                           | <0.5                       | <0.5                       | <0.5                | <0.5                | <0.5                  | <0.5                  | <0.5              | <0.5            | <0.5         | <0.5         | <0.5          | <0.5                      | <0.5        | <0.5                      | <0.05   | <0.05 | <0.05  | 0.05              | <0.05   | <0.05     | <0.05             | <0.05               | <0.05  |
| Maximum Concentration     | 1                         | <0.5                       | <0.5                       | <0.5                | <0.5                | <0.5                  | <0.5                  | <0.5              | <0.5            | <0.5         | <5           | <0.5          | <5                        | <0.5        | <5                        | 0.06    | <0.05 | <0.05  | 0.64              | <0.05   | 0.7       | <0.05             | <0.05               | <0.05  |
| Average Concentration *   |                           | 1                          | 1                          | 0.25                | 0.25                | 0.25                  | 0.25                  |                   | 0.25            | 0.25         | 0.4          | 0.25          | 0.4                       | 0.25        | 0.4                       | 0.028   | 0.025 | 0.025  | 0.083             | 0.025   | 0.11      |                   |                     | 0.025  |
| Standard Deviation *      |                           | 1                          |                            | 0                   | 0                   | 0                     | 0                     |                   | 0               | 0            | 0.58         | 0             | 0.58                      | 0           | 0.58                      | 0.011   | 0     | 0      | 0.18              | 0       | 0.2       |                   |                     | 0      |
| * A Non Detect Multiplier | of 0.5 has been applied   |                            |                            |                     |                     |                       |                       |                   |                 |              |              |               |                           |             |                           |         |       |        |                   |         |           |                   |                     |        |

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| -    | -     | -     | -      |
| ).7  | -     | -     | < 0.05 |
| -    | -     | -     | -      |
| 0.1  | -     | -     | < 0.05 |
| -    | -     | -     | -      |
| -    | -     | -     | -      |
| 0.1  | -     | -     | <0.05  |
| -    | -     | -     | -      |
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| -    | -     | -     | -      |
| 0.1  | -     | -     | < 0.05 |
| -    | -     | -     | -      |
| 0.1  | -     | -     | < 0.05 |
| 0.1  | -     | -     | < 0.05 |
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| -    | -     | -     | -      |
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| -    | -     | -     | -      |
| 0.1  | -     | -     | <0.05  |
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| 0.1  | -     | -     | <0.05  |
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| -    | -     | -     | -      |
| 0.1  | -     | -     | <0.05  |
| 0.1  | -     | -     | <0.05  |
| ).05 | <0.05 | <0.05 | <0.05  |
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| DWP   | Aus | tralia |
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| Kyeem | agh | NSW    |

# Cardno

|                          |                             |               | 1             | 1             | Organochlor   | ine Pesticides |               |               | 1                   | 1                 |                 |               |                 |              | 1                  |                   |              |                   |                  |                     |                 |                 |                      |              | ı                   |
|--------------------------|-----------------------------|---------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------------|-------------------|-----------------|---------------|-----------------|--------------|--------------------|-------------------|--------------|-------------------|------------------|---------------------|-----------------|-----------------|----------------------|--------------|---------------------|
|                          |                             | Ggg           | TOO           | DDT+DDE+DDD   | Dieldrin      | Endosulfan     | Endosulfan I  | Endosulfan II | Endosulfan sulphate | Endrin<br>Ball ba | Endrin aldehyde | Endrin ketone | g-BHC (Lindane) | Heptachlor   | Heptachlor epoxide | Hexachlorobenzene | Methoxychlor | Toxaphene         | Azinophos methyl | Bolstar (Sulprofos) | Bromophos-ethyl | Carbophenothion | Chlorfenvinphos      | Chlorpyrifos | Chlorpyrifos-methyl |
| FOI                      |                             | ту/ку<br>0.05 | ту/ку<br>0.05 | ту/ку<br>0.05 | ту/ку<br>0.05 | <b>тд/кд</b>   | ту/ку<br>0.05 | <b>тд/кд</b>  | <b>тд/кд</b>        | тд/кд<br>0.05     | ту/ку<br>0.05   | ту/ку<br>0.05 | ту/ку<br>0.05   | <b>тд/кд</b> | ту/ку<br>0.05      | ту/ку<br>0.05     | <b>тд/кд</b> | <b>ту/ку</b><br>1 | <b>тд/кд</b>     | <b>ту/ку</b><br>0.2 | ту/ку<br>0.05   | ту/ку<br>0.05   | <b>ту/ку</b><br>0.05 | <b>тд/кд</b> | тд/кд<br>0.05       |
| NSW 2014 General Solid   | Waste CT1 (No Leaching)     | 0.05          | 0.05          | 0100          | 0105          | 60             | 60            | 60            | 60                  | 0.005             | 0100            | 0100          | 0100            | 0.005        | 0105               | 0105              | 0100         | -                 | 0.00             | 012                 | 0100            | 0.00            | 0.00                 | 4            | 0.00                |
| NSW 2014 Restricted So   | lid Waste CT2 (No Leaching) |               |               |               |               | 240            | 240           | 240           | 240                 |                   |                 |               |                 |              |                    |                   |              |                   |                  |                     |                 |                 |                      | 16           |                     |
| NSW 2014 General Solid   | Waste SCC1 (with leached)   |               |               |               |               | 3 108          | 108           | 108           | 108                 |                   |                 |               |                 |              |                    |                   |              |                   |                  |                     |                 |                 |                      | 7.5          |                     |
| Field ID                 | Date                        | -             |               |               |               |                |               |               |                     |                   |                 |               |                 |              |                    |                   |              |                   |                  |                     |                 |                 |                      |              |                     |
| ASB2                     | 17/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| BH02_0.5<br>BH2_1.0      | 17/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    |              | -                   |
| BH03 0.5                 | 17/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    |              | -                   |
| вн4_0.4                  | 10/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| BH05_0.2-0.5             | 10/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| TP01_0.2                 | 10/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            |                     |
| TP01_0.9                 | 10/11/2018                  | -             | -             | - 0.12        | - 0.64        | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | - <0.05            | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| TP02_0.1                 | 10/11/2018                  | -             | 0.00          | 0.12          |               | -              | -             | -             | -                   |                   | -               | -             | -               | -            | -                  | -                 | -            | -                 |                  | -                   | -               | -               | -                    |              |                     |
| TP03 0.2                 | 10/11/2018                  | <0.05         | <0.05         | <0.05         | < 0.05        | -              | <0.05         | <0.05         | <0.05               | <0.05             | <0.05           | <0.05         | <0.05           | <0.05        | <0.05              | <0.05             | <0.05        | <1                | <0.2             | <0.2                | -               | -               | <0.2                 | <0.2         | <0.2                |
| <br>TP03_1.2             | 10/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| TP03_ASB1                | 10/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| TP04_0.1                 | 10/11/2018                  | <0.05         | <0.05         | <0.05         | <0.05         | -              | <0.05         | <0.05         | <0.05               | <0.05             | <0.05           | <0.05         | <0.05           | <0.05        | <0.05              | <0.05             | <0.05        | <1                | <0.2             | <0.2                | -               | -               | <0.2                 | <0.2         | <0.2                |
| TP04_0.4                 | 10/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| TP05_0.1                 | 10/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| TP05_0.9                 | 10/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    |              | -                   |
| TP06 0.3                 | 10/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| TP07_0.1                 | 10/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| TP07_0.4                 | 10/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| TP07_0.6                 | 10/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| TP08_0.4                 | 10/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| TP09_0.3                 | 10/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| TP10_0.1<br>TP11_0.2     | 10/11/2018                  | <0.05         | <0.05         | <0.05         | <0.05         | -              | <0.05         | - <0.05       | <0.05               | <0.05             | - <0.05         | - <0.05       | - <0.05         | - <0.05      | - <0.05            | <0.05             | - <0.05      | <1                | <0.2             | <0.2                | -               | -               | <0.2                 | <0.2         | <0.2                |
| TP11 1.2                 | 10/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| <br>TP12_0.2             | 10/11/2018                  | <0.05         | <0.05         | <0.05         | <0.05         | -              | <0.05         | <0.05         | <0.05               | <0.05             | <0.05           | <0.05         | <0.05           | <0.05        | <0.05              | <0.05             | <0.05        | <1                | <0.2             | <0.2                | -               | -               | <0.2                 | <0.2         | <0.2                |
| TP13_0.1                 | 17/11/2018                  | <0.05         | <0.05         | <0.05         | <0.05         | -              | <0.05         | <0.05         | <0.05               | <0.05             | <0.05           | <0.05         | <0.05           | <0.05        | <0.05              | <0.05             | <0.05        | <1                | <0.2             | <0.2                | -               | -               | <0.2                 | <0.2         | <0.2                |
| TP13_0.4                 | 17/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| TP14_0.1                 | 17/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            |                     |
| TP14_0.7                 | 17/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| TP15_0.1<br>TP15_0.6     | 17/11/2018                  | - <0.05       | <0.05         | <0.05         | <0.05         | -              | - <0.05       | - <0.05       | <0.05               | - <0.05           | - <0.05         | - <0.05       | - <0.05         | - <0.05      | - <0.05            | - <0.05           | - <0.05      | - <1              | <0.2             | <0.2                | -               | -               | <0.2                 | <0.2         | <0.2                |
| TP16_0.1                 | 17/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| <br>TP16_0.8             | 17/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    |              |                     |
| TP17_0.1                 | 17/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| TP17_0.5                 | 17/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            | -                   |
| TP18_0.1                 | 17/11/2018                  | <0.05         | <0.05         | <0.05         | 0.05          | -              | <0.05         | <0.05         | <0.05               | <0.05             | <0.05           | <0.05         | <0.05           | <0.05        | <0.05              | <0.05             | <0.05        | <1                | <0.2             | <0.2                | -               | -               | <0.2                 | <0.2         | <0.2                |
| TP18_0.4                 | 1//11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    |              | -                   |
| TP19 0.3                 | 10/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | _               | -                    |              | -                   |
| TP20_0.1                 | 17/11/2018                  | <0.05         | < 0.05        | <0.05         | < 0.05        | -              | <0.05         | <0.05         | <0.05               | < 0.05            | <0.05           | <0.05         | <0.05           | <0.05        | <0.05              | <0.05             | <0.05        | <1                | <0.2             | <0.2                | -               | -               | <0.2                 | <0.2         | <0.2                |
| QA100                    | 10/11/2018                  | <0.05         | <0.05         | <0.05         | <0.05         | -              | <0.05         | <0.05         | <0.05               | <0.05             | <0.05           | <0.05         | <0.05           | <0.05        | <0.05              | <0.05             | <0.05        | <1                | <0.2             | <0.2                | -               | -               | <0.2                 | <0.2         | <0.2                |
| QA200                    | 10/11/2018                  | <0.05         | <0.2          | < 0.05        | <0.05         | <0.05          | <0.05         | <0.05         | <0.05               | <0.05             | <0.05           | <0.05         | <0.05           | <0.05        | < 0.05             | <0.05             | <0.2         | -                 | <0.05            | -                   | <0.05           | <0.05           | <0.05                | <0.05        | <0.05               |
| QA300                    | 17/11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    |              |                     |
| QA400                    | 1//11/2018                  | -             | -             | -             | -             | -              | -             | -             | -                   | -                 | -               | -             | -               | -            | -                  | -                 | -            | -                 | -                | -                   | -               | -               | -                    | -            |                     |
| Statistics               |                             |               |               |               |               |                |               |               |                     |                   |                 |               |                 |              |                    |                   |              |                   |                  |                     |                 |                 |                      |              |                     |
| Number of Results        |                             | 11            | 11            | 11            | 11            | 1              | 11            | 11            | 11                  | 11                | 11              | 11            | 11              | 11           | 11                 | 11                | 11           | 10                | 11               | 10                  | 1               | 1               | 11                   | 11           | 11                  |
| Minimum Concentration    | 1                           | <0.05         | <0.05         | <0.05         | 0.05          | <0.05          | <0.05         | <0.05         | <0.05               | <0.05             | <0.05           | <0.05         | <0.05           | <0.05        | <0.05              | <0.05             | <0.05        | <1                | <0.05            | <0.2                | <0.05           | <0.05           | <0.05                | <0.05        | <0.05               |
| Maximum Concentratio     | n                           | <0.05         | <0.2          | 0.12          | 0.64          | <0.05          | <0.05         | <0.05         | <0.05               | <0.05             | <0.05           | <0.05         | <0.05           | <0.05        | <0.05              | <0.05             | <0.2         | <1                | <0.2             | <0.2                | <0.05           | <0.05           | <0.2                 | <0.2         | <0.2                |
| Average Concentration    | *                           | 0.025         | 0.035         | 0.034         | 0.083         |                | 0.025         | 0.025         | 0.025               | 0.025             | 0.025           | 0.025         | 0.025           | 0.025        | 0.025              | 0.025             | 0.032        | 0.5               | 0.093            | 0.1                 |                 |                 | 0.093                | 0.093        | 0.093               |
| Standard Deviation *     |                             | 0             | 0.024         | 0.029         | 0.18          |                | 0             | 0             | 0                   | 0                 | 0               | 0             | 0               | 0            | 0                  | 0                 | 0.023        | 0                 | 0.023            | 0                   |                 |                 | 0.023                | 0.023        | 0.023               |
| * A Non Detect Multiplie | er of 0.5 has been applied  | -             |               |               |               |                |               |               |                     |                   |                 |               |                 |              |                    |                   |              |                   | ·                |                     |                 |                 |                      | ł            |                     |

|     |       |       | 7.15  |       |
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| -   | -     | -     | -     | -     |
| -   | -     | <0.2  | <0.2  | <0.2  |
| -   | -     | -     | -     | -     |
| -   | -     | <0.2  | <0.2  | <0.2  |
| -   | -     | -     | -     | -     |
| -   | -     | -     | -     | -     |
| -   | -     | <0.2  | <0.2  | <0.2  |
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| -   | -     | <0.2  | <0.2  | <0.2  |
| -   | -     | -     | -     | -     |
| -   | -     | <0.2  | <0.2  | <0.2  |
| -   | -     | <0.2  | <0.2  | <0.2  |
| -   | -     | -     | -     | -     |
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| -   | -     | <0.2  | <0.2  | <0.2  |
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| -   | -     | <0.2  | <0.2  | <0.2  |
| -   | -     | -     | -     | -     |
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| -   | -     | <0.2  | <0.2  | <0.2  |
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| .05 | <0.05 | <0.05 | <0.05 | <0.05 |
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|   | DWP A  | ۹us | tralia |
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| I | Kyeema | gh  | NSW    |



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|   |  |                    |                    |                    |                    |                             |       |                     |                 | Organop           | hosphorous I | Pesticides | •                 |              |                   |                     |                               |                        |                         |                   |         |              |       |                  |       |       |
|---|--|--------------------|--------------------|--------------------|--------------------|-----------------------------|-------|---------------------|-----------------|-------------------|--------------|------------|-------------------|--------------|-------------------|---------------------|-------------------------------|------------------------|-------------------------|-------------------|---------|--------------|-------|------------------|-------|-------|
|   |  | Coumaphos<br>mg/kg | Demeton-O<br>mg/kg | Demeton-S<br>mg/kg | Diazi non<br>mg/kg | Sorrior<br>Diction<br>mg/kg | mg/kg | Disulfoton<br>mg/kg | Ethion<br>mg/kg | Ethoprop<br>mg/kg | mg/kg        | mg/kg      | Fenthion<br>Mg/kg | gy Malathion | Mer phos<br>mg/kg | gay/ga<br>barathion | wg/gg<br>Mevinphos (Phosdrin) | Monocrotophos<br>mg/kg | mg/gg<br>Maled (Dibrom) | methoate<br>by/kg | Phorate | mg/kg        | mg/kg | la nuno<br>mg/kg | mg/kg | mg/kg |
| EQL   |  | 2                  | 0.2                | 0.2                | 0.05               | 0.05                        | 0.05  | 0.2                 | 0.05            | 0.2               | 0.2          | 0.2        | 0.05              | 0.05         | 0.2               | 0.2                 | 0.2                           | 0.2                    | 0.2                     | 2                 | 0.2     | 0.05         | 0.2   | 0.2              | 0.2   | 0.2   |
| NSW 2014 General Solid W                              | Vaste CT1 (No Leaching)                              |                    |                    |                    |                    |                             |       |                     |                 |                   |              |            |                   |              |                   |                     |                               |                        |                         |                   |         |              |       |                  |       |       |
| NSW 2014 Restricted Solid<br>NSW 2014 General Solid W | Waste CT2 (No Leaching)<br>Vaste SCC1 (with leached) |                    |                    |                    |                    |                             |       |                     |                 |                   |              |            |                   |              |                   |                     |                               |                        |                         |                   |         |              |       |                  |       |       |
| Field ID  | Date   |                    |                    |                    |                    |                             |       |                     |                 |                   |              |            |                   |              |                   |                     |                               |                        |                         |                   |         |              |       |                  |       |       |
| ASB2  | 17/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | - 1   |
| BH02_0.5  | 17/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| BH2_1.0   | 17/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| BH03_0.5  | 17/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| BH4_0.4   | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| BH05_0.2-0.5  | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP01_0.2  | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP01_0.9  | 10/11/2018   | <2                 | <0.2               | <0.2               | <0.2               | <0.2                        | <0.2  | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2              | <0.2         | <0.2              | <0.2                | <0.2                          | <2                     | <0.2                    | <2                | <0.2    | -            | <0.2  | <0.2             | <0.2  | <0.2  |
| TP02_0.4  | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            |            | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP03_0.2  | 10/11/2018   | <2                 | <0.2               | <0.2               | <0.2               | <0.2                        | <0.2  | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2              | <0.2         | <0.2              | <0.2                | <0.2                          | <2                     | <0.2                    | <2                | <0.2    | -            | <0.2  | <0.2             | <0.2  | <0.2  |
| TP03_1.2  | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP03_ASB1   | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP04_0.1  | 10/11/2018   | <2                 | <0.2               | <0.2               | <0.2               | <0.2                        | <0.2  | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2              | <0.2         | <0.2              | <0.2                | <0.2                          | <2                     | <0.2                    | <2                | <0.2    | -            | <0.2  | <0.2             | <0.2  | <0.2  |
| TP04_0.4  | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP05_0.1  | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     |       |
| TP05_0.9  | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP06_0.1  | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP07 0.1  | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP07_0.4  | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP07_0.6  | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP08_0.4  | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP09_0.3  | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP10_0.1  | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP11_0.2  | 10/11/2018   | <2                 | <0.2               | <0.2               | <0.2               | <0.2                        | <0.2  | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2              | <0.2         | <0.2              | <0.2                | <0.2                          | <2                     | <0.2                    | <2                | <0.2    | -            | <0.2  | <0.2             | <0.2  | <0.2  |
| TP11_1.2  | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            |                   |                     | -                             | -                      | -                       | -                 | -       | -            |       | -                | -     |       |
| TP13_0.1  | 17/11/2018   | <2                 | <0.2               | <0.2               | <0.2               | <0.2                        | <0.2  | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2              | <0.2         | <0.2              | <0.2                | <0.2                          | <2                     | <0.2                    | <2                | <0.2    | -            | <0.2  | <0.2             | <0.2  | <0.2  |
| TP13 0.4  | 17/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
|   | 17/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP14_0.7  | 17/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP15_0.1  | 17/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP15_0.6  | 17/11/2018   | <2                 | <0.2               | <0.2               | <0.2               | <0.2                        | <0.2  | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2              | <0.2         | <0.2              | <0.2                | <0.2                          | <2                     | <0.2                    | <2                | <0.2    | -            | <0.2  | <0.2             | <0.2  | <0.2  |
| TP16_0.1  | 17/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP17_0.1  | 17/11/2018   | -                  |                    | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     |       |
| TP17_0.1  | 17/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP18 0.1  | 17/11/2018   | <2                 | <0.2               | <0.2               | <0.2               | <0.2                        | <0.2  | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2              | <0.2         | <0.2              | <0.2                | <0.2                          | <2                     | <0.2                    | <2                | <0.2    | -            | <0.2  | <0.2             | <0.2  | <0.2  |
|   | 17/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP19_0.1  | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP19_0.3  | 10/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| TP20_0.1  | 17/11/2018   | <2                 | <0.2               | <0.2               | <0.2               | <0.2                        | <0.2  | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2              | <0.2         | <0.2              | <0.2                | <0.2                          | <2                     | <0.2                    | <2                | <0.2    | -            | <0.2  | <0.2             | <0.2  | <0.2  |
| QA100   | 10/11/2018   | <2                 | <0.2               | <0.2               | <0.2               | <0.2                        | <0.2  | <0.2                | <0.2            | <0.2              | <0.2         | <0.2       | <0.2              | <0.2         | <0.2              | <0.2                | <0.2                          | <2                     | <0.2                    | <2                | <0.2    | -            | <0.2  | <0.2             | <0.2  | <0.2  |
| QA200   | 10/11/2018   | -                  | -                  | -                  | <0.05              | <0.05                       | <0.05 | -                   | <0.05           | -                 | -            | -          | <0.05             | <0.05        | -                 | <0.2                | -                             | <0.2                   | -                       | -                 | -       | <0.05        | -     | -                | -     |       |
| QA400   | 17/11/2018   | -                  | -                  | -                  | -                  | -                           | -     | -                   | -               | -                 | -            | -          | -                 | -            | -                 | -                   | -                             | -                      | -                       | -                 | -       | -            | -     | -                | -     | -     |
| Statistics  |  |                    |                    | •                  |                    | •                           |       |                     |                 |                   |              |            |                   |              |                   |                     |                               |                        |                         |                   | •       |              |       |                  |       |       |
| Number of Results                                     |  | 10                 | 10                 | 10                 | 11                 | 11                          | 11    | 10                  | 11              | 10                | 10           | 10         | 11                | 11           | 10                | 11                  | 10                            | 11                     | 10                      | 10                | 10      | 1            | 10    | 10               | 10    | 10    |
| Minimum Concentration                                 |  | 10                 | 10                 | 10                 | 11                 |                             | -0.05 | 10                  | -0.05           | 10                | 10           | 10         |                   | ~0.05        | 10                | -0.2                | 10                            |                        | 10                      | 01                | 10      | 1            | 10    | 10               | 10    | 10    |
| Maximum Concentration                                 |  | ~2                 | <0.2               | <0.2               | <0.05              | <0.05                       | <0.05 | <0.2                | <0.05           | <0.2              | <0.2         | <0.2       | <0.05             | <0.05        | <0.2              | <0.2                | <0.2                          | <0.2                   | <0.2                    | ~2                | <0.2    | <0.05        | <0.2  | <0.2             | <0.2  | <0.2  |
| Average Concentration *                               |  | 1                  | 0.2                | 0.2                | 0.2                | 0.2                         | 0.2   | 0.2                 | 0.2             | 0.2               | 0.2          | 0.2        | 0.2               | 0.2          | 0.2               | 0.2                 | 0.2                           | <u>^</u> 2             | 0.2                     | 1                 | 0.2     | <b>\U.U5</b> | 0.2   | 0.2              | 0.2   | 0.2   |
| Standard Deviation *                                  |  | 0                  | 0.1                | 0.1                | 0.095              | 0.095                       | 0.095 | 0.1                 | 0.095           | 0.1               | 0.1          | 0.1        | 0.095             | 0.095        | 0.1               | 0.1                 | 0.1                           | 0.92                   | 0.1                     | 0                 | 0.1     |              | 0.1   | 0.1              | 0.1   | 0.1   |
| * A Non Detect Multiplier                             | of 0.5 has been applied.                             |                    |                    |                    | 0.025              | 0.025                       | 0.025 |                     | 0.025           |                   |              |            | 0.025             | 0.025        | 5                 |                     |                               | 0.27                   |                         |                   |         | 1            | 5     |                  |       |       |



|                          |                            |                     |                       |                  |                          | Solvents     |   |                    |                 | Insecticides        |                  |              | Pesticides           |                     |                 |                     |               |  | Polychlorinat       | ed Biphenyls  |               | <b>,</b>  |                     |
|--------------------------|----------------------------|---------------------|-----------------------|------------------|--------------------------|--------------|---|--------------------|-----------------|---------------------|------------------|--------------|----------------------|---------------------|-----------------|---------------------|---------------|--|---------------------|---------------|---------------|---|---------------------|
|                          |                            | , Tetrachlorvinphos | , Methyl Ethyl Ketone | 2-hexanone (MBK) | 4-Methyl-2-<br>Pentanone | , Acetone    | allyl chloride  | , Carbon disulfide | . Vinyl acetate | , Tokuthion         | bemeton-S-methyl | , Fenamiphos | Parathion            | , Pirimiphos-methyl | Pirimphos-ethyl | Arochlor 1016       | Arochlor 1221 | Arochlor 1232  | Arochlor 1242       | Arochlor 1248 | Arochlor 1254 | Arochlor 1260                                   | PCBs (Sum of total) |
| FOI                      |                            | <b>тд/кд</b>        | mg/kg                 | mg/kg            | mg/kg                    | mg/kg        | mg/kg   | mg/kg              | mg/kg           | <b>mg/кg</b><br>0.2 | <b>mg/kg</b>     | <b>mg/кg</b> | <b>тд/кд</b>         | <b>mg/kg</b>        | mg/kg           | <b>mg/кg</b><br>0.1 | <b>mg/кg</b>  | <b>тд/кд</b>   | <b>mg/кg</b><br>0 1 | <b>mg/kg</b>  | 0 1           | <b>mg/кg</b><br>0 1                             | <b>mg/kg</b>        |
| NSW 2014 General Solid   | Waste CT1 (No Leaching)    | 012                 | 4,000                 | <u> </u>         | 015                      | 015          | 015   | 015                |                 | 012                 | 0.00             | 0.05         | 012                  | 0.2                 | 0105            | 0.11                | 0.11          | 011  | 012                 | 011           | 012           | 012   | 50                  |
| NSW 2014 Restricted Soli | id Waste CT2 (No Leaching) |                     | 16,000                |                  |                          |              |   |                    |                 |                     |                  |              |                      |                     |                 |                     |               |  |                     |               |               |   | 50                  |
| NSW 2014 General Solid   | Waste SCC1 (with leached)  |                     | 7,200                 |                  |                          |              |   |                    |                 |                     |                  |              |                      |                     |                 |                     |               |  |                     |               |               |   | 50                  |
| Field ID                 | Date                       |                     |                       |                  |                          |              |   |                    |                 |                     |                  |              |                      |                     |                 |                     |               |  |                     |               |               |   |                     |
| ASB2                     | 17/11/2018                 | -                   | -                     | -                | -                        | -            | -   | -                  | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   | -                   |
| BH02_0.5                 | 17/11/2018                 | -                   | -                     | -                | -                        | -<br>- C F   | -   | -<br>- C F         | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   | -                   |
| BH2_1.0<br>BH03 0.5      | 17/11/2018                 | -                   | -                     | -                | -                        | -            | -   | -                  | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   |                     |
|                          | 10/11/2018                 | -                   | -                     | -                | -                        | -            | -   | -                  | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   | -                   |
| BH05_0.2-0.5             | 10/11/2018                 | -                   | <0.5                  | -                | <0.5                     | <0.5         | <0.5  | <0.5               | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   | -                   |
| TP01_0.2                 | 10/11/2018                 | -                   | -                     | -                | -                        | -            | -   | -                  | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   |                     |
| TP01_0.9                 | 10/11/2018                 | <0.2                | -                     | -                | -                        | -            | -   | -                  | -               | <0.2                | -                | -            | <0.2                 | <0.2                | -               | <0.1                | <0.1          | <0.1   | <0.1                | <0.1          | <0.1          | <0.1  | <0.1                |
| TP02_0.4                 | 10/11/2018                 | -                   | -                     | -                | -                        | -            | -   | -                  | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   | -                   |
| TP03_0.2                 | 10/11/2018                 | <0.2                | -                     | -                | -                        | -            | -   | -                  | -               | <0.2                | -                | -            | <0.2                 | <0.2                | -               | <0.1                | <0.1          | <0.1   | <0.1                | <0.1          | <0.1          | <0.1  | <0.1                |
| TP03_1.2                 | 10/11/2018                 | -                   | <0.5                  | -                | <0.5                     | <0.5         | <0.5  | <0.5               | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   |                     |
| TP03_ASB1                | 10/11/2018                 | - <0.2              | -                     | -                | -                        | -            | -   | -                  | -               | - <0.2              | -                | -            | <0.2                 | - <0.2              | -               | - <0.1              | - <0.1        | - <0.1   | - <0.1              | - <0.1        | - <0.1        | - <0.1  | <0.1                |
| TP04_0.4                 | 10/11/2018                 | -                   | -                     | -                | -                        | -            | -   | -                  | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   | -                   |
| TP05_0.1                 | 10/11/2018                 | -                   | -                     | -                | -                        | -            | -   | -                  | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   | -                   |
| TP05_0.9                 | 10/11/2018                 | -                   | <0.5                  | -                | <0.5                     | <0.5         | <0.5  | <0.5               | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   |                     |
| TP06_0.1                 | 10/11/2018                 | -                   | - <0.5                | -                |                          | - <0.5       | -   | -                  | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   |                     |
| TP06_0.3                 | 10/11/2018                 | -                   | -                     | -                | -                        | -            | -   | -                  | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   | -                   |
| TP07_0.4                 | 10/11/2018                 | -                   | -                     | -                | -                        | -            | -   | -                  | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   | -                   |
| TP07_0.6                 | 10/11/2018                 | -                   | -                     | -                | -                        | -            | -   | -                  | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   |                     |
| TP08_0.4                 | 10/11/2018                 | -                   | <0.5                  | -                | <0.5                     | <0.5         | <0.5  | <0.5               | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   | -                   |
| TP09_0.3                 | 10/11/2018                 | -                   | -                     | -                | -                        | -            | -   | -                  | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   | -                   |
| TP11_0.2                 | 10/11/2018                 | <0.2                | -                     | -                | -                        | -            | -   | -                  | -               | <0.2                | -                | -            | <0.2                 | <0.2                | -               | <0.1                | <0.1          | <0.1   | <0.1                | <0.1          | <0.1          | <0.1  | <0.1                |
| TP11_1.2                 | 10/11/2018                 | -                   | <0.5                  | -                | <0.5                     | <0.5         | <0.5  | <0.5               | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   | -                   |
| TP12_0.2                 | 10/11/2018                 | <0.2                | -                     | -                | -                        | -            | -   | -                  | -               | <0.2                | -                | -            | <0.2                 | <0.2                | -               | <0.1                | <0.1          | <0.1   | <0.1                | <0.1          | <0.1          | <0.1  | <0.1                |
| TP13_0.1                 | 17/11/2018                 | <0.2                | <0.5                  | -                | <0.5                     | <0.5         | <0.5  | <0.5               | -               | <0.2                | -                | -            | <0.2                 | <0.2                | -               | <0.1                | <0.1          | <0.1   | <0.1                | <0.1          | <0.1          | <0.1  | <0.1                |
| TP13_0.4<br>TP14 0.1     | 17/11/2018                 | -                   | -                     | -                | -                        | -            | -   | -                  | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   | -                   |
| TP14_0.7                 | 17/11/2018                 | -                   | <0.5                  | -                | <0.5                     | <0.5         | <0.5  | <0.5               | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   | -                   |
| TP15_0.1                 | 17/11/2018                 | -                   | -                     | -                | -                        | -            | -   | -                  | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   | -                   |
| TP15_0.6                 | 17/11/2018                 | <0.2                | <0.5                  | -                | <0.5                     | <0.5         | <0.5  | <0.5               | -               | <0.2                | -                | -            | <0.2                 | <0.2                | -               | <0.1                | <0.1          | <0.1   | <0.1                | <0.1          | <0.1          | <0.1  | <0.1                |
| TP16_0.1                 | 17/11/2018                 | <u> </u>            | -<br><05              | -                | - <0.5                   | - <0.5       | - <0 5  | -<br><05           | -               |                     | -                | -            | -                    | -                   | -               |                     | -             | -  | -                   | -             | -             | -   | -                   |
| TP17_0.1                 | 17/11/2018                 | -                   |                       | -                |                          |              |   |                    | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   |                     |
| _<br>TP17_0.5            | 17/11/2018                 | -                   | <0.5                  | -                | <0.5                     | <0.5         | <0.5  | <0.5               | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   | -                   |
| TP18_0.1                 | 17/11/2018                 | <0.2                | -                     | -                | -                        | -            | -   | -                  | -               | <0.2                | -                | -            | <0.2                 | <0.2                | -               | <0.1                | <0.1          | <0.1   | <0.1                | <0.1          | <0.1          | <0.1  | <0.1                |
| TP18_0.4                 | 17/11/2018                 | -                   | <0.5                  | -                | <0.5                     | <0.5         | <0.5  | <0.5               | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   | -                   |
| TP19_0.1                 | 10/11/2018                 | -                   | -                     | -                | -                        | -            | -   | -                  | -               |                     | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   |                     |
| TP20_0.1                 | 17/11/2018                 | <0.2                | -                     | -                | -                        | -            | -   | -                  | -               | <0.2                | -                | -            | <0.2                 | <0.2                | -               | <0.1                | <0.1          | <0.1   | <0.1                | <0.1          | <0.1          | <0.1  | <0.1                |
| QA100                    | 10/11/2018                 | <0.2                | <0.5                  | -                | <0.5                     | <0.5         | <0.5  | <0.5               | -               | <0.2                | -                | -            | <0.2                 | <0.2                | -               | <0.1                | <0.1          | <0.1   | <0.1                | <0.1          | <0.1          | <0.1  | <0.1                |
| QA200                    | 10/11/2018                 |                     | <5                    | <5               | <5                       | -            | -   | <0.5               | <5              | -                   | <0.05            | <0.05        | <0.2                 | -                   | <0.05           | -                   | -             | -  | -                   | -             | -             | -   | <0.1                |
| QA400                    | 17/11/2018                 | -                   | -                     | -                | -                        | -            | -   | -                  | -               | -                   | -                | -            | -                    | -                   | -               | -                   | -             | -  | -                   | -             | -             | -   |                     |
| II                       |                            |                     | И                     |                  |                          | 1            |   | 1                  |                 | n                   |                  |              |                      | 1                   | 1               | 11                  | 1             | I  | 1                   |               |               |   |                     |
| Statistics               |                            | -                   | 1                     |                  |                          |              |   |                    |                 |                     |                  |              |                      |                     |                 | 1                   |               |  |                     |               |               |   |                     |
| Number of Results        |                            | 10                  | 15                    | 1                | 15                       | 14           | 14  | 15                 | 1               | 10                  | 1                | 1            | 11                   | 10                  | 1               | 10                  | 10            | 10   | 10                  | 10            | 10            | 10  | 11                  |
| Minimum Concentration    | ·                          | <0.2                | <0.5                  | <5               | <0.5                     | <0.5         | <0.5  | <0.5               | <5              | <0.2                | <0.05            | <0.05        | <0.2                 | <0.2                | <0.05           | <0.1                | <0.1          | <0.1   | <0.1                | <0.1          | <0.1          | <0.1  | <0.1                |
| Average Concentration    | 1<br>:                     | <0.2<br>0.1         | <5                    | <5               | <5<br>0.4                | <0.5<br>0.2E | <u.5< td=""><td>&lt;0.5<br/>0.2E</td><td>&lt;5</td><td>&lt;0.2<br/>0.1</td><td>&lt;0.05</td><td>&lt;0.05</td><td><u.z<br>0.1</u.z<br></td><td>&lt;0.2<br/>0.1</td><td>&lt;0.05</td><td>&lt;0.1<br/>0.05</td><td>&lt;0.1<br/>0.05</td><td><u.1< td=""><td>&lt;0.1</td><td>&lt;0.1</td><td>&lt;0.1<br/>0.05</td><td><u.1< td=""><td><u.1< td=""></u.1<></td></u.1<></td></u.1<></td></u.5<> | <0.5<br>0.2E       | <5              | <0.2<br>0.1         | <0.05            | <0.05        | <u.z<br>0.1</u.z<br> | <0.2<br>0.1         | <0.05           | <0.1<br>0.05        | <0.1<br>0.05  | <u.1< td=""><td>&lt;0.1</td><td>&lt;0.1</td><td>&lt;0.1<br/>0.05</td><td><u.1< td=""><td><u.1< td=""></u.1<></td></u.1<></td></u.1<> | <0.1                | <0.1          | <0.1<br>0.05  | <u.1< td=""><td><u.1< td=""></u.1<></td></u.1<> | <u.1< td=""></u.1<> |
| Standard Deviation *     |                            | 0                   | 0.58                  |                  | 0.58                     | 0            | 0   | 0                  | 1               | 0.1                 | ļ                |              | 0.1                  | 0                   |                 | 0.05                | 0             | 0.05   | 0.05                | 0             | 0.05          | 0.05  | 0.05                |
| * A Non Dotoct Multiplio | r of 0 5 bas been applied  | <u> </u>            |                       |                  | 2.25                     | -            | -   |                    |                 |                     |                  |              | -                    |                     | 1               |                     | . <u> </u>    |  |                     | -             | -             | -   |                     |

1ultiplier of 0.5 has been applied.



|  |             |         |         | BT           | EX             |            |              |         |           | TRH       |         |                           |
|--|-------------|---------|---------|--------------|----------------|------------|--------------|---------|-----------|-----------|---------|---------------------------|
|  |             | Benzene | Toluene | Ethylbenzene | Xylene (m & p) | Xylene (o) | Xylene Total | C6 - C9 | C10 - C14 | C15 - C28 | C29-C36 | +C10 - C36 (Sum of total) |
|  |             | μg/L    | μg/L    | μg/L         | μg/L           | μg/L       | μg/L         | μg/L    | μg/L      | μg/L      | μg/L    | μg/L                      |
| LOR  |             | 1       | 1       | 1            | 2              | 1          | 2            | 20      | 50        | 100       | 50      | 50                        |
| ANZECC 2000 Marine Water (90%)                     |             | 900     |         |              |                |            |              |         |           |           |         |                           |
| NEPM 2013 Table 1C GILs, Marine Waters             |             | 500     |         |              |                |            |              |         |           |           |         |                           |
| NEPM 2013 GW HSL Residential A&B, for Vapour Intru | sion, Sand  |         |         |              |                |            |              |         |           |           |         |                           |
| 2-4m   |             | 800     |         |              |                |            |              |         |           |           |         |                           |
| 4-8m   |             | 800     |         |              |                |            |              |         |           |           |         |                           |
| >8m  |             | 900     |         |              |                |            |              |         |           |           |         |                           |
| ANZECC 2000 Irrigation - Long-term trigger value   |             |         |         |              |                |            |              |         |           |           |         |                           |
| PFAS NEMP 2018 Table 5 Interim marine 90%          |             |         |         |              |                |            |              |         |           |           |         |                           |
| Field ID Location                                  | Sample Date |         |         |              |                |            |              |         |           |           |         |                           |
| MW01   | -           | <1      | <1      | <1           | <2             | <1         | <3           | <20     | <50       | <100      | <100    | <100                      |
| -  |             |         |         | ł            |                |            | -            | -       |           |           |         |                           |

| M     | W01  |            | <1 | <1 | <1 | <2 | <1 | <3 | <20 | <50 | <100 | <100 | <100 |
|-------|------|------------|----|----|----|----|----|----|-----|-----|------|------|------|
| M     | N02  |            | <1 | <1 | <1 | <2 | <1 | <3 | <20 | <50 | <100 | <100 | <100 |
| M     | W03  | 23/11/2018 | <1 | <1 | <1 | <2 | <1 | <3 | <20 | <50 | <100 | <100 | <100 |
| QA100 | MW02 |            | <1 | <1 | <1 | <2 | <1 | <3 | <20 | <50 | <100 | <100 | <100 |
| QA200 | MW02 |            | <1 | <2 | <2 | <2 | <2 | <2 | <20 | <50 | <100 | <50  | <50  |

| Statistical Summary     |    |    |    |    |    |    |     |     |      |      |      |
|-------------------------|----|----|----|----|----|----|-----|-----|------|------|------|
| Maximum Concentration   | <1 | <2 | <2 | <2 | <2 | <3 | <20 | <50 | <100 | <100 | <100 |
| Average Concentration * | <1 | <2 | <2 | <2 | <2 | <3 | <20 | <50 | <100 | <100 | <100 |
| Standard Deviation *    | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0    | 11   | 11   |



|                             |                              |             |                           |                   | CRC (        | Care TRH Frac | tions      |                                |                                    |                                      |                            | PAH                 |                 |                        |
|-----------------------------|------------------------------|-------------|---------------------------|-------------------|--------------|---------------|------------|--------------------------------|------------------------------------|--------------------------------------|----------------------------|---------------------|-----------------|------------------------|
|                             |                              |             | с6-C10<br><sup>7/84</sup> | 既<br>下<br>C10-C16 | 阵<br>C16-C34 | 南<br>て34-C40  | 편<br>다<br> | 西<br>下<br>F1: C6-C10 less BTEX | 편<br>F2: >C10-C16 less Naphthalene | ᄧ<br>머머머머머머머머 Benzo(b+j)fluoranthene | 既<br>人<br>人<br>Cenaphthene | 편<br>Acenaphthylene | 略<br>Anthracene | 편<br>Benz(a)anthracene |
| LOR                         |                              |             | 20                        | 50                | 100          | 100           | 100        | 20                             | 50                                 | 1                                    | 1                          | 1                   | 1               | 1                      |
| ANZECC 2000 Marine Wate     | er (90%)                     |             |                           |                   |              |               |            |                                |                                    |                                      |                            |                     |                 |                        |
| NEPM 2013 Table 1C GILs,    | Marine Waters                |             |                           |                   |              |               |            |                                |                                    |                                      |                            |                     |                 |                        |
| NEPM 2013 GW HSL Reside     | ential A&B, for Vapour Intru | sion, Sand  |                           |                   |              |               |            |                                |                                    |                                      |                            |                     |                 |                        |
| 2-4m                        |                              |             |                           |                   |              |               |            | 1,000                          | 1,000                              |                                      |                            |                     |                 |                        |
| 4-8m                        |                              |             |                           |                   |              |               |            | 1,000                          | 1,000                              |                                      |                            |                     |                 |                        |
| >8m                         |                              |             |                           |                   |              |               |            | 1,000                          | 1,000                              |                                      |                            |                     |                 |                        |
| ANZECC 2000 Irrigation - Lo | ong-term trigger value       |             |                           |                   |              |               |            |                                |                                    |                                      |                            |                     |                 |                        |
| PFAS NEMP 2018 Table 5 Ir   | nterim marine 90%            |             |                           |                   |              |               |            |                                |                                    |                                      |                            |                     |                 |                        |
| Field ID                    | Location                     | Sample Date |                           |                   |              |               |            |                                |                                    |                                      |                            |                     |                 |                        |
| MV                          | V01                          |             | <20                       | <50               | <100         | <100          | <100       | <20                            | <50                                | <1                                   | <1                         | <1                  | <1              | <1                     |
| MV                          | V02                          | ]           | <20                       | <50               | <100         | <100          | <100       | <20                            | <50                                | <1                                   | <1                         | <1                  | <1              | <1                     |
| MV                          | V03                          | 23/11/2018  | <20                       | <50               | <100         | <100          | <100       | <20                            | <50                                | <1                                   | <1                         | <1                  | <1              | <1                     |
| QA100                       | MW02                         | ]           | <20                       | <50               | <100         | <100          | <100       | <20                            | <50                                | <1                                   | <1                         | <1                  | <1              | <1                     |
| QA200                       | MW02                         |             | <20                       | <100              | <100         | <100          | <100       | <20                            | <100                               | <1.0                                 | <1.0                       | <1.0                | <1.0            | <1.0                   |
| Statistical Summary         |                              |             |                           |                   |              |               |            |                                |                                    |                                      |                            |                     |                 |                        |
| Maximum Concentration       |                              |             | <20                       | <100              | <100         | <100          | <100       | <20                            | <100                               | <1                                   | <1                         | <1                  | <1              | <1                     |
| Average Concentration *     |                              |             | <20                       | <100              | <100         | <100          | <100       | <20                            | <100                               | <1                                   | <1                         | <1                  | <1              | <1                     |
| Standard Deviation *        |                              |             | 0                         | 11                | 0            | 0             | 0          | 0                              | 11                                 | 0                                    | 0                          | 0                   | 0               | 0                      |

| Field ID | LOCATION | Sample Date |     |      |      |      |      |     |      |   |
|----------|----------|-------------|-----|------|------|------|------|-----|------|---|
| MW       | 01       |             | <20 | <50  | <100 | <100 | <100 | <20 | <50  | < |
| MW       | 02       |             | <20 | <50  | <100 | <100 | <100 | <20 | <50  | < |
| MW       | 03       | 23/11/2018  | <20 | <50  | <100 | <100 | <100 | <20 | <50  | < |
| QA100    | MW02     |             | <20 | <50  | <100 | <100 | <100 | <20 | <50  | < |
| QA200    | MW02     |             | <20 | <100 | <100 | <100 | <100 | <20 | <100 | < |

| Maximum Concentration   | <20 | <100 | <100 | <100 | <100 | <20 | <100 | < |
|-------------------------|-----|------|------|------|------|-----|------|---|
| Average Concentration * | <20 | <100 | <100 | <100 | <100 | <20 | <100 | < |
| Standard Deviation *    | 0   | 11   | 0    | 0    | 0    | 0   | 11   | ( |



|  |             |                |                |                      |                      |                    |                       | PAH          |                    |
|--|-------------|----------------|----------------|----------------------|----------------------|--------------------|-----------------------|--------------|--------------------|
|  |             | BaP TEQ (zero) | Benzo(a)pyrene | Benzo(g,h,i)perylene | Benzo(k)fluoranthene | Chrysene           | Dibenz(a,h)anthracene | Eluoranthene | Eluorene           |
|  |             | 0.5            | 0.5            | 1                    | <u> 1</u>            | <u>r-87 –</u><br>1 | <u>r-87 –</u><br>1    | <u></u>      | <u>r-87 –</u><br>1 |
| ANZECC 2000 Marine Water (90%)                     |             | 0.5            | 0.5            | -                    | -                    | -                  | -                     |              |                    |
| NEPM 2013 Table 1C GILs Marine Waters              |             |                |                |                      |                      |                    |                       |              |                    |
| NEPM 2013 GW HSL Residential A&B. for Vapour Intru | ision. Sand |                |                |                      |                      |                    |                       |              |                    |
| 2-4m   |             |                |                |                      |                      |                    |                       |              |                    |
| 4-8m   |             |                |                |                      |                      |                    |                       |              |                    |
| >8m  |             |                |                |                      |                      |                    |                       |              |                    |
| ANZECC 2000 Irrigation - Long-term trigger value   |             |                |                |                      |                      |                    |                       |              |                    |
| PFAS NEMP 2018 Table 5 Interim marine 90%          |             |                |                |                      |                      |                    |                       |              |                    |
| Field ID Location                                  | Sample Date |                |                |                      |                      |                    |                       |              |                    |
| N/1N/01  |             |                | -11            | -11                  | -1                   | -1                 | -1                    | -1           | -1                 |

| MV    | W01  |            |      | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   |
|-------|------|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| MV    | N02  |            |      | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   |
| MV    | N03  | 23/11/2018 |      | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   |
| QA100 | MW02 |            |      | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   | <1   |
| QA200 | MW02 |            | <0.5 | <0.5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <0.5 | <1.0 | <1.0 |

| Maximum Concentration   | <0.5 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <10 | <1 | <1 | <1 |
|-------------------------|------|----|----|----|----|----|----|----|----|-----|----|----|----|
| Average Concentration * | <0.6 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <10 | <1 | <1 | <1 |
| Standard Deviation *    |      | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0  | 0  | 0  |

| Indeno(1,2,3-c,d)pyrene | Naphthalene | PAHs (Sum of total) | Phenanthrene | Pyrene |
|-------------------------|-------------|---------------------|--------------|--------|
| μg/L                    | μg/L        | µg/L                | µg/L         | µg/L   |
| 1                       | 1           | 0.5                 | 1            | 1      |
|                         | 90          |                     |              |        |
|                         | 50          |                     |              |        |
|                         |             |                     |              |        |
|                         |             |                     |              |        |
|                         |             |                     |              |        |
|                         |             |                     |              |        |
|                         |             |                     |              |        |



|  |       |                          |                                 | Me                | tals   |                    |                   |                 |
|--|-------|--------------------------|---------------------------------|-------------------|--------|--------------------|-------------------|-----------------|
|  | mg/L  | mg<br>Cadmium (filtered) | mg/Chromium (III+VI) (filtered) | Copper (filtered) | mg/L   | Mercury (filtered) | Nickel (filtered) | Zinc (filtered) |
| LOR  | 0.001 | 0.0001                   | 0.001                           | 0.001             | 0.001  | 0.0001             | 0.001             | 0.005           |
| ANZECC 2000 Marine Water (90%)                               |       | 0.014                    | -                               | 0.003             | 0.0066 | 0.0007             | 0.2               | 0.023           |
| NEPM 2013 Table 1C GILs, Marine Waters                       |       | 0.0007                   |                                 | 0.0013            | 0.0044 | 0.0001             | 0.007             | 0.015           |
| NEPM 2013 GW HSL Residential A&B, for Vapour Intrusion, Sand |       |                          |                                 |                   |        |                    |                   |                 |
| 2-4m   |       |                          |                                 |                   |        |                    |                   |                 |
| 4-8m   |       |                          |                                 |                   |        |                    |                   |                 |
| >8m  |       |                          |                                 |                   |        |                    |                   |                 |
| ANZECC 2000 Irrigation - Long-term trigger value             | 0.1   | 0.01                     | 0.1                             | 0.2               | 2      | 0.002              | 0.2               | 2               |
| PFAS NEMP 2018 Table 5 Interim marine 90%                    |       |                          |                                 |                   |        |                    |                   |                 |

| Field ID | Location | Sample Date | _       |         |        |        |        |          |        |        |
|----------|----------|-------------|---------|---------|--------|--------|--------|----------|--------|--------|
| M        | W01      |             | < 0.001 | <0.0002 | 0.002  | 0.002  | <0.001 | < 0.0001 | <0.001 | <0.005 |
| M        | N02      |             | <0.001  | <0.0002 | <0.001 | <0.001 | <0.001 | <0.0001  | 0.001  | <0.005 |
| M        | N03      | 23/11/2018  | <0.001  | <0.0002 | 0.002  | 0.001  | <0.001 | <0.0001  | 0.004  | 0.006  |
| QA100    | MW02     |             | <0.001  | <0.0002 | <0.001 | <0.001 | <0.001 | <0.0001  | 0.002  | <0.005 |
| QA200    | MW02     |             | <0.001  | <0.0001 | <0.001 | 0.001  | <0.001 | <0.0001  | 0.001  | <0.005 |

| Maximum Concentration   | <0.001 | <0.0002 | 0.002 | 0.002 | <0.001 | <0.0001 | 0.004 | 0.006 |
|-------------------------|--------|---------|-------|-------|--------|---------|-------|-------|
| Average Concentration * | <0.001 | <0.0002 | 0.001 | 0.001 | <0.001 | <0.0001 | 0.002 | 0.003 |
| Standard Deviation *    | 0      | 0       | 0.001 | 0.001 | 0      | 0       | 0.001 | 0.002 |
|                         |        |         |       |       |        |         |       |       |



|   |  |                                      |  | Pe                                    | erfluorocarbo                          | ns                                   |                                     |                               |                                 |
|---|--|--------------------------------------|--|---------------------------------------|--|--------------------------------------|-------------------------------------|-------------------------------|---------------------------------|
|   | 2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N- | Perfluorobutane sulfonic acid (PFBS) | E Perfluoropentane sulfonic acid (PFPeS) | Perfluorohexane sulfonic acid (PFHxS) | Perfluoroheptane sulfonic acid (PFHpS) | Perfluorooctane sulfonic acid (PFOS) | Perfluorodecanesulfonic acid (PFDS) | Perfluorobutanoic acid (PFBA) | Perfluoropentanoic acid (PFPeA) |
| LOR   |  | 0.01                                 | 0.01                                     | 0.01                                  | 0.01                                   | 0.01                                 | 0.01                                | 0.05                          | 0.01                            |
| ANZECC 2000 Marine Water (90%)                            |  |                                      |  |                                       |  |                                      |                                     |                               |                                 |
| NEPM 2013 Table 1C GILs, Marine Waters                    |  |                                      |  |                                       |  |                                      |                                     |                               |                                 |
| NEPM 2013 GW HSL Residential A&B, for Vapour Intrusion, S | and  |                                      |  |                                       |  |                                      |                                     |                               |                                 |
| 2-4m  |  |                                      |  |                                       |  |                                      |                                     |                               |                                 |
| 4-8m  |  |                                      |  |                                       |  |                                      |                                     |                               |                                 |
| >8m   |  |                                      |  |                                       |  |                                      |                                     |                               |                                 |
| ANZECC 2000 Irrigation - Long-term trigger value          |  |                                      |  |                                       |  |                                      |                                     |                               |                                 |
| PFAS NEMP 2018 Table 5 Interim marine 90%                 |  |                                      |  |                                       |  | 2                                    |                                     |                               |                                 |

| Field ID | Location | Sample Date | -         |       |       |       |       |       |       |       |       |
|----------|----------|-------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|
| M        | W01      |             | < 0.00005 | <0.01 | <0.01 | 0.02  | <0.01 | <0.01 | <0.01 | <0.05 | <0.01 |
| M        | N02      |             | < 0.00005 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.05 | <0.01 |
| M        | N03      | 23/11/2018  | < 0.00005 | <0.01 | <0.01 | 0.01  | <0.01 | <0.01 | <0.01 | <0.05 | <0.01 |
| QA100    | MW02     |             | < 0.00005 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.05 | <0.01 |
| QA200    | MW02     |             | <0.00005  | <0.02 | <0.02 | <0.02 | <0.02 | <0.01 | <0.02 | <0.1  | <0.02 |

| Maximum Concentration   | <5E-05 | <0.02 | <0.02 | 0.02 | <0.02 | <0.01 | <0.02 | <0.1 | <0.02 |
|-------------------------|--------|-------|-------|------|-------|-------|-------|------|-------|
| Average Concentration * | <5E-06 | <0.02 | <0.02 | 0.01 | <0.02 | <0.01 | <0.02 | <0.1 | <0.02 |
| Standard Deviation *    | 0      | 0     | 0     | 0.01 | 0     | 0     | 0     | 0    | 0     |

\* A Non Detect Multiplier of 0.5 has been applied.

## **DWP** Architects Pyrmont NSW



| a)<br>a)<br>b)<br>b)<br>b)<br>b)<br>b)<br>b)<br>b)<br>b)<br>b)<br>b   |
|---|
| 1/3前     1/3前     1/3前     1/3前     1/3前     1/3前       N     N     Perfluor ode canoic acid (PFNA   |
| OR         0.01         0.02         0.05 |
| NZECC 2000 Marine Water (90%)   |
| IEPM 2013 Table 1C GILs, Marine Waters  |
| IEPM 2013 GW HSL Residential A&B, for Vapour Intrusion, Sand  |
| 2-4m  |
| 4-8m  |
| >8m   |
| NZECC 2000 Irrigation - Long-term trigger value   |
| FAS NEMP 2018 Table 5 Interim marine 90%   632   632  |

| Field ID | Location | Sample Date | -      |       |       |        |       |        |        |       |        |       |       |
|----------|----------|-------------|--------|-------|-------|--------|-------|--------|--------|-------|--------|-------|-------|
| M        | W01      |             | < 0.01 | <0.01 | <0.01 | < 0.01 | <0.01 | < 0.01 | < 0.01 | <0.01 | < 0.01 | <0.05 | <0.05 |
| М        | W02      |             | < 0.01 | <0.01 | <0.01 | < 0.01 | <0.01 | <0.01  | < 0.01 | <0.01 | < 0.01 | <0.05 | <0.05 |
| М        | W03      | 23/11/2018  | < 0.01 | <0.01 | <0.01 | < 0.01 | <0.01 | <0.01  | < 0.01 | <0.01 | < 0.01 | <0.05 | <0.05 |
| QA100    | MW02     |             | < 0.01 | <0.01 | <0.01 | < 0.01 | <0.01 | <0.01  | < 0.01 | <0.01 | < 0.01 | <0.05 | <0.05 |
| QA200    | MW02     |             | < 0.02 | <0.02 | <0.01 | <0.02  | <0.02 | <0.02  | <0.02  | <0.02 | <0.05  | <0.02 | <0.05 |

| Statistical Summary     |       |       |       |       |       |       |       |       |       |       |       |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Maximum Concentration   | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.05 | <0.05 |
| Average Concentration * | <0.02 | <0.02 | <0.01 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.05 | <0.05 | <0.05 |
| Standard Deviation *    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |



|  |   |  |   |  | Perf                                      | fluorocarbons                         | 6                                     |   |             |                           |                       |
|--|---|--|---|--|---|---------------------------------------|---------------------------------------|---|-------------|---------------------------|-----------------------|
|  | Rethyl perfluorooctane sulfonamide (EtFOSA) | Rethyl perfluorooctane sulfonamidoethanol (EtFOSE) | Rethyl perfluorooctane sulfonamidoacetic acid (MeFOSAA) | N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA) | 4:2 Fluorotelomer sulfonic acid (4:2 FTS) | 6:2 Fluorotelomer Sulfonate (6:2 FtS) | 8:2 Fluorotelomer sulfonate (8:2 FtS) | 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | Sum of PFAS | Sum of PFAS (WA DER List) | Sum of PFHxS and PFOS |
| LOR  | 0.05  | 0.05   | 0.02  | 0.02   | 0.01                                      | 0.05                                  | 0.01                                  | 0.01  | 0.01        | 0.01                      | 0.01                  |
| ANZECC 2000 Marine Water (90%)                               |   |  |   |  |   |                                       |                                       |   |             |                           |                       |
| NEPM 2013 Table 1C GILs, Marine Waters                       |   |  |   |  |   |                                       |                                       |   |             |                           |                       |
| NEPM 2013 GW HSL Residential A&B, for Vapour Intrusion, Sand |   |  |   |  |   |                                       |                                       |   |             |                           |                       |
| 2-4m   |   |  |   |  |   |                                       |                                       |   |             |                           |                       |
| 4-8m   |   |  |   |  |   |                                       |                                       |   |             |                           |                       |
| >8m  |   |  |   |  |   |                                       |                                       |   |             |                           |                       |
| ANZECC 2000 Irrigation - Long-term trigger value             |   |  |   |  |   |                                       |                                       |   |             |                           |                       |
| PFAS NEMP 2018 Table 5 Interim marine 90%                    |   |  |   |  |   |                                       |                                       |   |             |                           |                       |

| Field ID | Location | Sample Date | -     |       |       |       |       |       |        |        |       |       |        |
|----------|----------|-------------|-------|-------|-------|-------|-------|-------|--------|--------|-------|-------|--------|
| М        | W01      |             | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | <0.01  | <0.01  | <0.1  | <0.05 | 0.02   |
| М        | W02      |             | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | < 0.01 | < 0.01 | <0.1  | <0.05 | < 0.01 |
| М        | W03      | 23/11/2018  | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | < 0.01 | < 0.01 | <0.1  | <0.05 | 0.01   |
| QA100    | MW02     |             | <0.05 | <0.05 | <0.05 | <0.05 | <0.01 | <0.05 | < 0.01 | < 0.01 | <0.1  | <0.05 | < 0.01 |
| QA200    | MW02     |             | <0.05 | <0.05 | <0.02 | <0.02 | <0.05 | <0.05 | <0.05  | <0.05  | <0.01 | <0.01 | < 0.01 |

| <0.05 | <0.05               | <0.05 | <0.05   | <0.05                | <0.05                     | <0.05                          | <0.05                               | <0.1  | <0.05   | 0.02  |
|-------|---------------------|-------|---|----------------------|---------------------------|--------------------------------|-------------------------------------|---|---|---|
| <0.05 | <0.05               | <0.05 | <0.05   | <0.05                | <0.05                     | <0.05                          | <0.05                               | <0.1  | <0.05   | 1.02  |
| 0     | 0                   | 0     | 0   | 0                    | 0                         | 0                              | 0                                   | 0   | 0   | 0   |
|       | <0.05<br><0.05<br>0 | <0.05 | <0.05         <0.05         <0.05           <0.05 | <0.05<0.05<0.05<0.05 | <0.05<0.05<0.05<0.05<0.05 | <0.05<0.05<0.05<0.05<0.05<0.05 | <0.05<0.05<0.05<0.05<0.05<0.05<0.05 | <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05 <th< td=""><td>&lt;0.05         &lt;0.05         &lt;0.05 <th< td=""><td>&lt;0.05         &lt;0.05         &lt;0.05 <th< td=""></th<></td></th<></td></th<> | <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05 <th< td=""><td>&lt;0.05         &lt;0.05         &lt;0.05 <th< td=""></th<></td></th<> | <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05         <0.05 <th< td=""></th<> |



|                       |           |            |           |            | BT   | ΈX           |               | -          |           | -          |               |
|-----------------------|-----------|------------|-----------|------------|------|--------------|---------------|------------|-----------|------------|---------------|
|                       |           |            |           | hulhanzana |      | and (m. & m) |               |            |           | dene Total |               |
| <del>م</del><br>mg/kg | د<br>μg/L | ⊢<br>mg/kg | -<br>μg/L | u<br>mg/kg | μg/L | ≻<br>mg/kg   | <u>κ</u> μg/L | ><br>mg/kg | <<br>μg/L | ×<br>mg/kg | <u>κ</u> μg/L |
| 0.1                   | 1         | 0.1        | 1         | 0.1        | 1    | 0.2          | 2             | 0.1        | 1         | 0.3        | 3             |

| Field ID | Date       |    |    |    |    |    |    |
|----------|------------|----|----|----|----|----|----|
| KYE_GUM  | 17/11/2018 |    |    |    |    |    |    |
| KYE_RIN  | 17/11/2018 | <1 | <1 | <1 | <2 | <1 | <3 |



|                 |    |           |                 | TRH                             |   |   |   |                               |
|-----------------|----|-----------|-----------------|---------------------------------|---|---|---|-------------------------------|
| со - со<br>щg/L | L  | 215 - C28 | с29-C36<br>тв/Г | 전 [1] +C10 - C36 (Sum of total) | 전 자 TPH C10-C14 Fraction after Silica Cleanup | 전 전 TPH C15-C28 Fraction after Silica Cleanup | 전 전 TPH C29-C36 Fraction after Silica Cleanup | 전 전 - C36 Fraction (sum) (SG) |
| 20              | 50 | 100       | 100             | 100                             | 50  | 100   | 100   | 100                           |

| Field ID | Date       |     |     |      |      |      |     |      |      |      |
|----------|------------|-----|-----|------|------|------|-----|------|------|------|
| KYE_GUM  | 17/11/2018 | <20 | <50 | <100 | <100 | <100 | <50 | <100 | <100 | <100 |
| KYE_RIN  | 17/11/2018 | <20 | <50 | <100 | <100 | <100 |     |      |      |      |



|     |             |              |                    |  | CRC Care TR                        | RH Fractions             |   |                            |                              |                            |
|-----|-------------|--------------|--------------------|--|------------------------------------|--------------------------|---|----------------------------|------------------------------|----------------------------|
|     | 、<br>ア<br>ト | 利<br>て10-C16 | Д<br>Т/<br>С16-С34 | 五人<br>五人<br>五人<br>五人<br>五人<br>五人<br>五人<br>五人<br>五人<br>五<br>一<br>五<br>一<br>二<br>一<br>二<br>一<br>二<br>一<br>二<br>二<br>一<br>二<br>二<br>一<br>二<br>二<br>二<br>二 | 五<br>文<br>て10 - C40 (Sum of total) | (1) F1: C6-C10 less BTEX | 五<br>人<br>人<br>上<br>F2: >C10-C16 less Naphthalene | 전 >C10 - C16 Fraction (SG) | (文) >C16 - C34 Fraction (SG) | 전 >C34 - C40 Fraction (SG) |
| LOR | 20          | 50           | 100                | 100  | 100                                | 20                       | 50  | 50                         | 100                          | 100                        |

| Field ID | Date       |     |     |      |      |      |     |     |     |      |      |
|----------|------------|-----|-----|------|------|------|-----|-----|-----|------|------|
| KYE_GUM  | 17/11/2018 | <20 | <50 | <100 | <100 | <100 | <20 | <50 | <50 | <100 | <100 |
| KYE_RIN  | 17/11/2018 | <20 | <50 | <100 | <100 | <100 | <20 | <50 |     |      |      |



|     |             |                   |                     | PA         | ١H           |                     |                           |                           |
|-----|-------------|-------------------|---------------------|------------|--------------|---------------------|---------------------------|---------------------------|
|     | 뚔<br>고<br>고 | 随<br>Acenaphthene | 편<br>Acenaphthylene | Anthracene | 随<br>協力<br>ア | 所<br>Benzo(a)pyrene | 편<br>Benzo(g,h,i)perylene | 知<br>路enzo(k)fluoranthene |
| LOR | 1           | 1                 | 1                   | 1          | 1            | 1                   | 1                         | 1                         |

| Field ID | Date       |    |    |    |    |    |    |    |    |
|----------|------------|----|----|----|----|----|----|----|----|
| KYE_GUM  | 17/11/2018 |    |    |    |    |    |    |    |    |
| KYE_RIN  | 17/11/2018 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |



|     |      |                    |          |      | PAH                  |          |                  |           |      |
|-----|------|--------------------|----------|------|----------------------|----------|------------------|-----------|------|
|     | sene | enz(a,h)anthracene | ranthene | rene | :no(1,2,3-c,d)pyrene | hthalene | s (Sum of total) | nanthrene | ue   |
|     | Chry | Dibe               | Fluc     | Fluc | lnde                 | Nap      | PAH              | Phe       | Pyre |
|     | μg/L | μg/L               | μg/L     | µg/L | µg/L                 | μg/L     | µg/L             | µg/L      | µg/L |
| LOR | 1    | 1                  | 1        | 1    | 1                    | 1        | 1                | 1         | 1    |

| Field ID | Date       |    |    |    |    |    |     |    |    |    |
|----------|------------|----|----|----|----|----|-----|----|----|----|
| KYE_GUM  | 17/11/2018 |    |    |    |    |    | <10 |    |    |    |
| KYE_RIN  | 17/11/2018 | <1 | <1 | <1 | <1 | <1 | <1  | <1 | <1 | <1 |



|       |        |                | Me    | tals       |        |       |       |
|-------|--------|----------------|-------|------------|--------|-------|-------|
| enic  | mium   | omium (III+VI) |       | tais<br>To | rcury  | e     |       |
| Ars   | Cac    | Chr            | Cot   | Lea        | Me     | Nic   | Zin   |
| mg/L  | mg/L   | mg/L           | mg/L  | mg/L       | mg/L   | mg/L  | mg/L  |
| 0.001 | 0.0002 | 0.001          | 0.001 | 0.001      | 0.0001 | 0.001 | 0.005 |

| Field ID | Date       |        |         |        |        |        |         |        |        |
|----------|------------|--------|---------|--------|--------|--------|---------|--------|--------|
| KYE_GUM  | 17/11/2018 |        |         |        |        |        |         |        |        |
| KYE_RIN  | 17/11/2018 | <0.001 | <0.0002 | <0.001 | <0.001 | <0.001 | <0.0001 | <0.001 | <0.005 |



Trip Blank / Trip Spike Kyeemagh Infant School Project: 80818157

|                 |          |             |         |         | BT           | ΈX             |            |              |
|-----------------|----------|-------------|---------|---------|--------------|----------------|------------|--------------|
|                 |          |             | Benzene | Toluene | Ethylbenzene | Xylene (m & p) | Xylene (o) | Xylene Total |
|                 |          |             | mg/kg   | mg/kg   | mg/kg        | mg/kg          | mg/kg      | mg/kg        |
|                 | LOR      |             | 0.1     | 0.1     | 0.1          | 0.2            | 0.1        | 0.3          |
| Site            | Field ID | Sample Date |         |         |              |                |            |              |
| Kyeemagh Infant | ТВ       | 17/11/2019  | <0.1    | <0.1    | <0.1         | <0.2           | <0.1       | <0.3         |
| School          | TS*      | 1//11/2018  | 83      | 82      | 82           | 83             | 84         | 84           |

\*This sample is a Trip Spike and therefore all results are reported as a percentage


|                                    |       | Field ID | TP12_0.2   | QA100      |     | QA200      |     | TP16_0.1   | QA300      |     | QA400      |          |
|------------------------------------|-------|----------|------------|------------|-----|------------|-----|------------|------------|-----|------------|----------|
|                                    |       | Date     | 10/11/2018 | 10/11/2018 | RPD | 10/11/2018 | RPD | 17/11/2018 | 17/11/2018 | RPD | 17/11/2018 | RPD      |
|                                    | Unit  | LOR      |            | •          | •   |            |     | •          |            | •   |            | <u> </u> |
| BTEX                               |       |          |            |            |     |            |     |            |            |     |            |          |
| Benzene                            | mg/kg | 0.1      | <0.1       | <0.1       | 0   | <0.2       | 0   | <0.1       | <0.1       | 0   | <0.2       | 0        |
| Toluene                            | mg/kg | 0.1      | <0.1       | <0.1       | 0   | <0.5       | 0   | <0.1       | <0.1       | 0   | <0.5       | 0        |
| Ethylbenzene                       | mg/kg | 0.1      | <0.1       | <0.1       | 0   | <0.5       | 0   | <0.1       | <0.1       | 0   | <0.5       | 0        |
| Xylene (m & p)                     | mg/kg | 0.2      | <0.2       | <0.2       | 0   | <0.5       | 0   | <0.2       | <0.2       | 0   | <0.5       | 0        |
| Xylene (o)                         | mg/kg | 0.1      | <0.1       | <0.1       | 0   | <0.5       | 0   | <0.1       | <0.1       | 0   | <0.5       | 0        |
| Xylene Total                       | mg/kg | 0.3      | <0.3       | <0.3       | 0   | <0.5       | 0   | <0.3       | <0.3       | 0   | <0.5       | 0        |
| Total BTEX                         | mg/kg | 0.2      |            |            |     | <0.2       |     |            |            |     | <0.2       |          |
| TRH                                |       |          |            |            |     |            |     |            |            |     |            |          |
| C6 - C9                            | mg/kg | 10       | <20        | <20        | 0   | <10        | 0   | <20        | <20        | 0   | <10        | 0        |
| C10 - C14                          | mg/kg | 20       | <20        | <20        | 0   | <50        | 0   | <20        | <20        | 0   | <50        | 0        |
| C15 - C28                          | mg/kg | 50       | <50        | <50        | 0   | <100       | 0   | <50        | <50        | 0   | <100       | 0        |
| C29-C36                            | mg/kg | 50       | <50        | <50        | 0   | <100       | 0   | <50        | <50        | 0   | <100       | 0        |
| +C10 - C36 (Sum of total)          | mg/kg | 50       | <50        | <50        | 0   | <50        | 0   | <50        | <50        | 0   | <50        | 0        |
| CRC Care TRH Fractions             |       |          |            |            |     |            |     |            |            |     |            |          |
| C6-C10                             | mg/kg | 10       | <20        | <20        | 0   | <10        | 0   | <20        | <20        | 0   | <10        | 0        |
| C10-C16                            | mg/kg | 50       | <50        | <50        | 0   | <50        | 0   | <50        | <50        | 0   | <50        | 0        |
| C16-C34                            | mg/kg | 100      | <100       | <100       | 0   | <100       | 0   | <100       | <100       | 0   | <100       | 0        |
| C34-C40                            | mg/kg | 100      | <100       | <100       | 0   | <100       | 0   | <100       | <100       | 0   | <100       | 0        |
| C10 - C40 (Sum of total)           | mg/kg | 50       | <100       | <100       | 0   | <50        | 0   | <100       | <100       | 0   | <50        | 0        |
| F1: C6-C10 less BTEX               | mg/kg | 10       | <20        | <20        | 0   | <10        | 0   | <20        | <20        | 0   | <10        | 0        |
| F2: >C10-C16 less Naphthalene      | mg/kg | 50       | <50        | <50        | 0   | <50        | 0   | <50        | <50        | 0   | <50        | 0        |
| РАН                                |       |          |            |            |     |            |     |            |            |     |            |          |
| Benzo(a)pyrene TEQ (half LOR)_     | mg/kg | 0.5      | 0.6        | 0.6        | 0   | 0.6        | 0   | 0.6        | 0.6        | 0   | 0.6        | 0        |
| Benzo(a)pyrene TEQ (upper bound) * | mg/kg | 0.5      | 1.2        | 1.2        | 0   | 1.2        | 0   | 1.2        | 1.2        | 0   | 1.2        | 0        |
| Benzo(b+j)fluoranthene             | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | <0.5       | <0.5       | 0   | <0.5       | 0        |
| Acenaphthene                       | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | <0.5       | <0.5       | 0   | <0.5       | 0        |
| Acenaphthylene                     | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | <0.5       | <0.5       | 0   | <0.5       | 0        |
| Anthracene                         | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | <0.5       | <0.5       | 0   | <0.5       | 0        |
| Benz(a)anthracene                  | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | <0.5       | <0.5       | 0   | <0.5       | 0        |
| BaP TEQ (zero)                     | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | <0.5       | <0.5       | 0   | <0.5       | 0        |
| Benzo(a)pyrene                     | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | <0.5       | <0.5       | 0   | <0.5       | 0        |
| Benzo(g,h,i)perylene               | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | <0.5       | <0.5       | 0   | <0.5       | 0        |
| Benzo(k)fluoranthene               | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | <0.5       | <0.5       | 0   | <0.5       | 0        |
| Chrysene                           | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | <0.5       | <0.5       | 0   | <0.5       | 0        |
| Dibenz(a,h)anthracene              | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | <0.5       | <0.5       | 0   | <0.5       | 0        |
| Fluoranthene                       | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | <0.5       | <0.5       | 0   | <0.5       | 0        |
| Fluorene                           | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | <0.5       | <0.5       | 0   | <0.5       | 0        |
| Indeno(1,2,3-c,d)pyrene            | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | <0.5       | <0.5       | 0   | <0.5       | 0        |
| Naphthalene                        | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | < 0.5      | <0.5       | 0   | <0.5       | 0        |
| PAHs (Sum of total)                | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | <0.5       | <0.5       | 0   | <0.5       | 0        |
| Phenanthrene                       | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | <0.5       | <0.5       | 0   | <0.5       | 0        |
| Pyrene                             | mg/kg | 0.5      | <0.5       | <0.5       | 0   | <0.5       | 0   | <0.5       | <0.5       | 0   | <0.5       | 0        |



|                                     |       | Field ID | TP12_0.2   | QA100      |     | QA200      |     | TP16_0.1   | QA300      |     | QA400      |     |
|-------------------------------------|-------|----------|------------|------------|-----|------------|-----|------------|------------|-----|------------|-----|
|                                     |       | Date     | 10/11/2018 | 10/11/2018 | RPD | 10/11/2018 | RPD | 17/11/2018 | 17/11/2018 | RPD | 17/11/2018 | RPD |
|                                     | Unit  | LOR      | 1          |            | -   |            | •   |            |            |     |            |     |
| Metals                              |       |          | Î.         |            |     |            |     |            |            |     |            |     |
| Arsenic                             | mg/kg | 2        | <2         | <2         | 0   | <5         | 0   | <2         | <2         | 0   | <5         | 0   |
| Cadmium                             | mg/kg | 0.4      | <0.4       | <0.4       | 0   | <1         | 0   | <0.4       | <0.4       | 0   | <1         | 0   |
| Chromium (III+VI)                   | mg/kg | 2        | <5         | <5         | 0   | <2         | 0   | <5         | <5         | 0   | <2         | 0   |
| Copper                              | mg/kg | 5        | <5         | 11         | 75  | <5         | 0   | <5         | 5.2        | 4   | 5          | 0   |
| Iron                                | mg/kg | 20       | 630        |            |     |            |     |            |            |     |            |     |
| Lead                                | mg/kg | 5        | 13         | 14         | 7   | 8          | 48  | 17         | 19         | 11  | 21         | 21  |
| Mercury                             | mg/kg | 0.1      | <0.1       | <0.1       | 0   | <0.1       | 0   | <0.1       | <0.1       | 0   | <0.1       | 0   |
| Nickel                              | mg/kg | 2        | <5         | <5         | 0   | <2         | 0   | <5         | <5         | 0   | <2         | 0   |
| Zinc                                | mg/kg | 5        | 17         | 15         | 12  | 10         | 52  | 18         | 20         | 11  | 22         | 20  |
| SVOCs                               |       |          |            |            |     |            |     |            |            |     |            |     |
| EPN                                 | mg/kg | 0.2      | <0.2       | <0.2       | 0   |            |     |            |            |     |            |     |
| Organochlorine Pesticides           |       |          |            |            |     |            |     |            |            |     |            |     |
| Vic EPA IWRG 621 OCP (Total)*       | MG/KG | 0.1      | <0.1       | <0.1       | 0   |            |     |            |            |     |            |     |
| Vic EPA IWRG 621 Other OCP (Total)* | MG/KG | 0.1      | <0.1       | <0.1       | 0   |            |     |            |            |     |            |     |
| 4,4-DDE                             | mg/kg | 0.05     | < 0.05     | <0.05      | 0   | <0.05      | 0   |            |            |     |            |     |
| a-BHC                               | mg/kg | 0.05     | < 0.05     | < 0.05     | 0   | < 0.05     | 0   |            |            |     |            |     |
| Aldrin                              | mg/kg | 0.05     | < 0.05     | <0.05      | 0   | <0.05      | 0   |            |            |     |            |     |
| Aldrin + Dieldrin                   | mg/kg | 0.05     | < 0.05     | <0.05      | 0   | <0.05      | 0   |            |            |     |            |     |
| b-BHC                               | mg/kg | 0.05     | < 0.05     | <0.05      | 0   | <0.05      | 0   |            |            |     |            |     |
| Chlordane                           | mg/kg | 0.05     | <0.1       | <0.1       | 0   | <0.05      | 0   |            |            |     |            |     |
| Chlordane (cis)                     | mg/kg | 0.05     |            |            |     | <0.05      |     |            |            |     |            |     |
| Chlordane (trans)                   | mg/kg | 0.05     |            |            |     | <0.05      |     |            |            |     |            |     |
| d-BHC                               | mg/kg | 0.05     | <0.05      | <0.05      | 0   | <0.05      | 0   |            |            |     |            |     |
| DDD                                 | mg/kg | 0.05     | <0.05      | <0.05      | 0   | <0.05      | 0   |            |            |     |            |     |
| DDT                                 | mg/kg | 0.05     | <0.05      | <0.05      | 0   | <0.2       | 0   |            |            |     |            |     |
| DDT+DDE+DDD                         | mg/kg | 0.05     | <0.05      | <0.05      | 0   | <0.05      | 0   |            |            |     |            |     |
| Dieldrin                            | mg/kg | 0.05     | < 0.05     | <0.05      | 0   | <0.05      | 0   |            |            |     |            |     |
| Endosulfan                          | mg/kg | 0.05     |            |            |     | <0.05      |     |            |            |     |            |     |
| Endosulfan I                        | mg/kg | 0.05     | < 0.05     | < 0.05     | 0   | <0.05      | 0   |            |            |     |            |     |
| Endosulfan II                       | mg/kg | 0.05     | < 0.05     | <0.05      | 0   | <0.05      | 0   |            |            |     |            |     |
| Endosulfan sulphate                 | mg/kg | 0.05     | <0.05      | <0.05      | 0   | <0.05      | 0   |            |            |     |            |     |
| Endrin                              | mg/kg | 0.05     | <0.05      | <0.05      | 0   | <0.05      | 0   |            |            |     |            |     |
| Endrin aldehyde                     | mg/kg | 0.05     | <0.05      | <0.05      | 0   | <0.05      | 0   |            |            |     |            |     |
| Endrin ketone                       | mg/kg | 0.05     | <0.05      | <0.05      | 0   | <0.05      | 0   |            |            |     |            |     |
| g-BHC (Lindane)                     | mg/kg | 0.05     | < 0.05     | < 0.05     | 0   | < 0.05     | 0   |            |            |     |            |     |
| Heptachlor                          | mg/kg | 0.05     | < 0.05     | < 0.05     | 0   | < 0.05     | 0   |            |            |     |            |     |
| Heptachlor epoxide                  | mg/kg | 0.05     | < 0.05     | <0.05      | 0   | < 0.05     | 0   |            |            |     |            |     |
| Hexachlorobenzene                   | mg/kg | 0.05     | < 0.05     | < 0.05     | 0   | < 0.05     | 0   |            |            |     |            |     |
| Methoxychlor                        | mg/kg | 0.05     | < 0.05     | < 0.05     | 0   | <0.2       | 0   |            |            |     |            |     |
| Toxaphene                           | mg/kg | 1        | <1         | <1         | 0   |            |     |            |            |     |            |     |



RPD Table

| Kyeemagh Infant School Kyeemagh Infant School |       |          |            |              |      |            |     |            |            |     |            |             |
|---|-------|----------|------------|--------------|------|------------|-----|------------|------------|-----|------------|-------------|
|   |       | Field ID | TP12 0.2   | 04966t: 8081 | 8157 | QA200      |     | TP16 0.1   | QA300      |     | QA400      |             |
|   |       | Date     | 10/11/2018 | 10/11/2018   | RPD  | 10/11/2018 | RPD | 17/11/2018 | 17/11/2018 | RPD | 17/11/2018 | RPD         |
|   | Unit  |          | 10/11/2010 | 10/11/2010   |      | 10/11/2010 |     | 17/11/2010 | 17/11/2010 |     | 17/11/2010 |             |
| Organanhaanharaus Pastisidas                  | Onit  | LON      |            |              |      |            |     |            |            |     |            | <del></del> |
| Tokuthion                                     | ma/ka | 0.2      | (0.2       | -0.2         | 0    |            |     |            |            |     |            |             |
| Asianahas mathul                              | mg/kg | 0.2      | <0.2       | <0.2         | 0    | <0.0F      | 0   |            |            |     |            |             |
| Azinophos metnyi                              | mg/kg | 0.05     | <0.2       | <0.2         | 0    | <0.05      | 0   |            |            |     |            |             |
| Boistar (Sulprofos)                           | mg/kg | 0.2      | <0.2       | <0.2         | 0    | 10.05      |     |            |            |     |            |             |
| Bromopnos-etnyi                               | mg/kg | 0.05     |            |              |      | <0.05      |     |            |            |     |            |             |
| Carbopnenotnion                               | mg/kg | 0.05     | -0.2       | .0.2         | 0    | <0.05      | 0   |            |            |     |            |             |
| Chlomemifes                                   | mg/kg | 0.05     | <0.2       | <0.2         | 0    | <0.05      | 0   |            |            |     |            | +           |
| Chlorpyritos                                  | mg/kg | 0.05     | <0.2       | <0.2         | 0    | <0.05      | 0   |            |            |     |            |             |
| Chiorpyritos-methyl                           | mg/kg | 0.05     | <0.2       | <0.2         | 0    | <0.05      | 0   |            |            |     |            | +           |
| Coumapnos                                     | mg/kg | 2        | <2         | <2           | 0    |            |     |            |            |     |            |             |
| Demeton-O                                     | mg/kg | 0.2      | <0.2       | <0.2         | 0    |            | -   |            |            |     |            |             |
| Demeton-S                                     | mg/kg | 0.2      | <0.2       | <0.2         | 0    | 0.05       |     |            |            |     |            |             |
| Diazinon                                      | mg/kg | 0.05     | <0.2       | <0.2         | 0    | <0.05      | 0   |            |            |     |            | _           |
| Dichlorvos                                    | mg/kg | 0.05     | <0.2       | <0.2         | 0    | < 0.05     | 0   |            |            |     | _          |             |
| Dimethoate                                    | mg/kg | 0.05     | <0.2       | <0.2         | 0    | <0.05      | 0   |            |            |     | _          |             |
| Disulfoton                                    | mg/kg | 0.2      | <0.2       | <0.2         | 0    |            |     |            |            |     |            |             |
| Ethion  | mg/kg | 0.05     | <0.2       | <0.2         | 0    | <0.05      | 0   |            |            |     |            |             |
| Ethoprop                                      | mg/kg | 0.2      | <0.2       | <0.2         | 0    |            |     |            |            |     |            |             |
| Fenitrothion                                  | mg/kg | 0.2      | <0.2       | <0.2         | 0    |            |     |            |            |     |            |             |
| Fensulfothion                                 | mg/kg | 0.2      | <0.2       | <0.2         | 0    |            |     |            |            |     |            |             |
| Fenthion                                      | mg/kg | 0.05     | <0.2       | <0.2         | 0    | < 0.05     | 0   |            |            |     |            |             |
| Malathion                                     | mg/kg | 0.05     | <0.2       | <0.2         | 0    | <0.05      | 0   |            |            |     |            |             |
| Merphos                                       | mg/kg | 0.2      | <0.2       | <0.2         | 0    |            |     |            |            |     |            |             |
| Methyl parathion                              | mg/kg | 0.2      | <0.2       | <0.2         | 0    | <0.2       | 0   |            |            |     |            |             |
| Mevinphos (Phosdrin)                          | mg/kg | 0.2      | <0.2       | <0.2         | 0    |            |     |            |            |     |            |             |
| Monocrotophos                                 | mg/kg | 0.2      | <2         | <2           | 0    | <0.2       | 0   |            |            |     |            |             |
| Naled (Dibrom)                                | mg/kg | 0.2      | <0.2       | <0.2         | 0    |            |     |            |            |     |            |             |
| Omethoate                                     | mg/kg | 2        | <2         | <2           | 0    |            |     |            |            |     |            | _           |
| Phorate                                       | mg/kg | 0.2      | <0.2       | <0.2         | 0    |            |     |            |            |     |            | _           |
| Prothiofos                                    | mg/kg | 0.05     |            |              |      | <0.05      |     |            |            |     |            |             |
| Pyrazophos                                    | mg/kg | 0.2      | <0.2       | <0.2         | 0    |            |     |            |            |     |            |             |
| Ronnel  | mg/kg | 0.2      | <0.2       | <0.2         | 0    |            |     |            |            |     |            |             |
| Terbufos                                      | mg/kg | 0.2      | <0.2       | <0.2         | 0    |            |     |            |            |     |            |             |
| Trichloronate                                 | mg/kg | 0.2      | <0.2       | <0.2         | 0    |            |     |            |            |     |            |             |
| Tetrachlorvinphos                             | mg/kg | 0.2      | <0.2       | <0.2         | 0    |            |     |            |            |     |            |             |
| Pe <u>sticides</u>                            |       |          |            |              |      |            |     |            |            |     |            | _           |
| Demeton-S-methyl                              | mg/kg | 0.05     |            |              |      | <0.05      |     |            |            |     |            |             |
| Fenamiphos                                    | mg/kg | 0.05     |            |              |      | <0.05      |     |            |            |     |            | _           |
| Parathion                                     | mg/kg | 0.2      | <0.2       | <0.2         | 0    | <0.2       | 0   |            |            |     |            | _           |
| Pirimiphos-methyl                             | mg/kg | 0.2      | <0.2       | <0.2         | 0    |            |     |            |            |     |            |             |
| Pirimphos-ethyl                               | mg/kg | 0.05     |            |              |      | <0.05      |     |            |            |     |            |             |
| Polychlorinated Biphenyls                     |       |          |            |              |      |            |     |            |            |     |            |             |
| Arochlor 1016                                 | mg/kg | 0.1      | <0.1       | <0.1         | 0    | 1          |     |            |            |     |            |             |
| Arochlor 1221                                 | mg/kg | 0.1      | <0.1       | <0.1         | 0    |            |     |            |            |     |            |             |
| Arochlor 1232                                 | mg/kg | 0.1      | <0.1       | <0.1         | 0    |            |     |            |            |     |            |             |
| Arochlor 1242                                 | mg/kg | 0.1      | <0.1       | <0.1         | 0    |            |     |            |            |     |            |             |
| Arochlor 1248                                 | mg/kg | 0.1      | <0.1       | <0.1         | 0    |            |     |            |            |     |            |             |
| Arochlor 1254                                 | mg/kg | 0.1      | <0.1       | <0.1         | 0    |            |     |            |            |     |            |             |
| Arochlor 1260                                 | mg/kg | 0.1      | <0.1       | <0.1         | 0    |            |     |            |            |     |            |             |
| PCBs (Sum of total)                           | mg/kg | 0.1      | <0.1       | <0.1         | 0    | <0.1       | 0   |            |            |     |            |             |

### DWP Architects Pyrmont NSW

# C Cardno

Pyrene

|                               |               | Lab Report Number   | 629653     | 629653     |     | 629653     | ES1835239  |     |
|-------------------------------|---------------|---------------------|------------|------------|-----|------------|------------|-----|
|                               |               | Field ID            | MW02       | QA100      | RPD | MW02       | QA200      | RPD |
|                               |               | Sampled Date/Time   | 23/11/2018 | 23/11/2018 |     | 23/11/2018 | 23/11/2018 |     |
|                               |               |                     |            |            |     |            |            |     |
| Chemistry Name                | Units         | LOR                 |            |            |     |            |            |     |
| BTEX                          |               |                     |            |            |     |            |            |     |
| Benzene                       | ua/l          | 1                   | <1         | <1         | 0   | <1         | <1         | 0   |
| Toluene                       | ua/l          | 1 : 2 (Interlab)    | <1         | <1         | 0   | <1         | <2         | 0   |
| Ethylbenzene                  | ua/l          | 1 : 2 (Interlab)    | <1         | <1         | 0   | <1         | <2         | 0   |
| Xylene (m & p)                | ua/l          | 2                   | <2         | <2         | 0   | <2         | <2         | 0   |
| Xylene (o)                    | ua/l          | 1 : 2 (Interlab)    | <1         | <1         | 0   | <1         | <2         | 0   |
| Xvlene Total                  | ua/l          | 3 : 2 (Interlab)    | <3         | <3         | 0   | <3         | <2         | 0   |
| TPH                           | ~ <u>9</u> /. |                     |            |            |     |            |            |     |
| C6 - C9                       | ua/l          | 20                  | <20        | <20        | 0   | <20        | <20        | 0   |
| C10 - C14                     | ua/l          | 50                  | <50        | <50        | 0   | <50        | <50        | 0   |
| C15 - C28                     | ua/l          | 100                 | <100       | <100       | 0   | <100       | <100       | 0   |
| C29-C36                       | ua/l          | 100 : 50 (Interlab) | <100       | <100       | 0   | <100       | <50        | 0   |
| +C10 - C36 (Sum of total)     | ua/l          | 100 : 50 (Interlab) | <100       | <100       | 0   | <100       | <50        | 0   |
| CRC Care TPH Fractions        | - 3.          | ,                   |            |            |     |            |            |     |
| C6-C10                        | ua/l          | 20                  | <20        | <20        | 0   | <20        | <20        | 0   |
| C10-C16                       | ua/l          | 50 : 100 (Interlab) | <50        | <50        | 0   | <50        | <100       | 0   |
| C16-C34                       | ua/l          | 100                 | <100       | <100       | 0   | <100       | <100       | 0   |
| C34-C40                       | ua/l          | 100                 | <100       | <100       | 0   | <100       | <100       | 0   |
| C10 - C40 (Sum of total)      | ua/l          | 100                 | <100       | <100       | 0   | <100       | <100       | 0   |
| F1: C6-C10 less BTEX          | ua/l          | 20                  | <20        | <20        | 0   | <20        | <20        | 0   |
| F2: >C10-C16 less Naphthalene | ug/l          | 50 : 100 (Interlab) | <50        | <50        | 0   | <50        | <100       | 0   |
| МАН                           | - 3.          |                     |            |            |     |            |            |     |
| Total MAH                     | ma/l          | 0.003               | < 0.003    | < 0.003    | 0   | < 0.003    |            |     |
| 1.2.4-trimethylbenzene        | ua/l          | 1 : 5 (Interlab)    | <1         | <1         | 0   | <1         | <5         | 0   |
| 1.3.5-trimethylbenzene        | ua/l          | 1 : 5 (Interlab)    | <1         | <1         | 0   | <1         | <5         | 0   |
| Isopropylbenzene              | ua/l          | 1 : 5 (Interlab)    | <1         | <1         | 0   | <1         | <5         | 0   |
| Styrene                       | ua/l          | 1 : 5 (Interlab)    | <1         | <1         | 0   | <1         | <5         | 0   |
| РАН                           | - 3.          | ()                  |            |            |     |            |            |     |
| Benzo(b+i)fluoranthene        | ua/l          | 1                   | <1         | <1         | 0   | <1         | <1         | 0   |
| Acenaphthene                  | ua/l          | 1                   | <1         | <1         | 0   | <1         | <1         | 0   |
| Acenaphthylene                | ua/l          | 1                   | <1         | <1         | 0   | <1         | <1         | 0   |
| Anthracene                    | ua/l          | 1                   | <1         | <1         | 0   | <1         | <1         | 0   |
| Benz(a)anthracene             | ua/l          | 1                   | <1         | <1         | 0   | <1         | <1         | 0   |
| Benzo(a)pyrene                | ua/l          | 1 : 0.5 (Interlab)  | <1         | <1         | 0   | <1         | < 0.5      | 0   |
| Benzo(g,h,i)pervlene          | ua/l          | 1                   | <1         | <1         | 0   | <1         | <1         | 0   |
| Benzo(k)fluoranthene          | ua/l          | 1                   | <1         | <1         | 0   | <1         | <1         | 0   |
| Chrysene                      | ua/l          | 1                   | <1         | <1         | 0   | <1         | <1         | 0   |
| Dibenz(a,h)anthracene         | ua/l          | 1                   | <1         | <1         | 0   | <1         | <1         | 0   |
| Fluoranthene                  | ua/l          | 1                   | <1         | <1         | 0   | <1         | <1         | 0   |
| Fluorene                      | ua/l          | 1                   | <1         | <1         | 0   | <1         | <1         | 0   |
| Indeno(1,2,3-c,d)pyrene       | ua/l          | 1                   | <1         | <1         | 0   | <1         | <1         | 0   |
| Naphthalene                   | ua/l          | 10 : 5 (Interlab)   | <10        | <10        | 0   | <10        | <1         | 0   |
| Naphthalene                   | µg/l          | 1 : 5 (Interlab)    | <1         | <1         | 0   | <1         | <1         | 0   |
| PAHs (Sum of total)           | μ <u>g</u> /l | 1 : 0.5 (Interlab)  | <1         | <1         | 0   | <1         | <0.5       | 0   |
| Phenanthrene                  | ua/l          | 1                   | <1         | <1         | 0   | <1         | <1         | 0   |
| Pyrene                        | µg/l          | 1                   | <1         | <1         | 0   | <1         | <1         | 0   |

#### DWP Australia Kyeemagh NSW



|                                     |             | Lab Report Number          | 629653     | 629653     |     | 629653     | ES1835239  |     |
|-------------------------------------|-------------|----------------------------|------------|------------|-----|------------|------------|-----|
|                                     |             | Field ID                   | MW02       | QA100      | RPD | MW02       | QA200      | RPD |
|                                     |             | Sampled Date/Time          | 23/11/2018 | 23/11/2018 |     | 23/11/2018 | 23/11/2018 |     |
| Metals                              |             |                            |            |            |     |            |            |     |
| Arsenic (Filtered)                  | mg/l        | 0.001                      | <0.001     | <0.001     | 0   | <0.001     | <0.001     | 0   |
| Cadmium (Filtered)                  | mg/l        | 0.0002 : 0.0001 (Interlab) | < 0.0002   | < 0.0002   | 0   | < 0.0002   | <0.0001    | 0   |
| Chromium (III+VI) (Filtered)        | mg/l        | 0.001                      | <0.001     | <0.001     | 0   | <0.001     | <0.001     | 0   |
| Copper (Filtered)                   | mg/l        | 0.001                      | <0.001     | <0.001     | 0   | <0.001     | 0.001      | 0   |
| Lead (Filtered)                     | mg/l        | 0.001                      | <0.001     | <0.001     | 0   | <0.001     | <0.001     | 0   |
| Mercury (Filtered)                  | mg/l        | 0.0001                     | <0.0001    | <0.0001    | 0   | <0.0001    | <0.0001    | 0   |
| Nickel (Filtered)                   | mg/l        | 0.001                      | 0.001      | 0.002      | 67  | 0.001      | 0.001      | 0   |
| Zinc (Filtered)                     | mg/l        | 0.005                      | <0.005     | <0.005     | 0   | <0.005     | <0.005     | 0   |
| Chlorinated Hydrocarbons            |             |                            |            |            |     |            |            |     |
| Vic EPA IWRG 621 CHC (Total)*       | mg/kg       | 0.005                      | < 0.005    | <0.005     | 0   | < 0.005    |            |     |
| Vic EPA IWRG 621 Other CHC (Total)* | mg/kg       | 0.005                      | < 0.005    | <0.005     | 0   | < 0.005    |            |     |
| 1,1,1,2-tetrachloroethane           | µg/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| 1,1,1-trichloroethane               | µg/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| 1,1,2,2-tetrachloroethane           | µg/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| 1,1,2-trichloroethane               | µg/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| 1,1-dichloroethane                  | µg/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| 1,1-dichloroethene                  | µg/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| 1,2,3-trichloropropane              | µg/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| 1,2-dichloroethane                  | µg/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| 1,2-dichloropropane                 | µg/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| 1.3-dichloropropane                 | µg/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| Bromochloromethane                  | µg/l        | 1                          | <1         | <1         | 0   | <1         |            | _   |
| Bromodichloromethane                | µg/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| Bromoform                           | µg/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| Carbon tetrachloride                | µg/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| Chlorodibromomethane                | µg/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| Chloroethane                        | µg/l        | 1 : 50 (Interlab)          | <1         | <1         | 0   | <1         | <50        | 0   |
| Chloroform                          | µg/l        | 5                          | <5         | <5         | 0   | <5         | <5         | 0   |
| Chloromethane                       | ug/l        | 1 : 50 (Interlab)          | <1         | <1         | 0   | <1         | <50        | 0   |
| cis-1,2-dichloroethene              | µg/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| cis-1,3-dichloropropene             | ua/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| Dibromomethane                      | ua/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| Dichloromethane                     | ug/l        | 1                          | <1         | <1         | 0   | <1         | -          | _   |
| Trichloroethene                     | ua/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| Tetrachloroethene                   | ua/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| trans-1,2-dichloroethene            | ua/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| trans-1,3-dichloropropene           | ua/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| Vinyl chloride                      | ua/l        | 1 : 50 (Interlab)          | <1         | <1         | 0   | <1         | <50        | 0   |
| Halogenated Hydrocarbons            |             |                            |            |            | -   |            |            | -   |
| 1.2-dibromoethane                   | ua/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| 1.2-dichlorobenzene                 | ua/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| 1.3-dichlorobenzene                 | ua/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| 1.4-dichlorobenzene                 | ua/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| 4-chlorotoluene                     | ua/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| Bromobenzene                        | ua/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| Bromomethane                        | ua/l        | 1 : 50 (Interlab)          | <1         | <1         | 0   | <1         | <50        | 0   |
| Chlorobenzene                       | ua/l        | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
| Dichlorodifluoromethane             | ua/l        | 1 : 50 (Interlab)          | <1         | <1         | 0   | <1         | <50        | 0   |
| lodomethane                         | <u>ua/l</u> | 1 : 5 (Interlab)           | <1         | <1         | 0   | <1         | <5         | 0   |
|                                     | MM/1        |                            |            |            |     |            | ~~         |     |

### DWP Architects Pyrmont NSW

## Cardno

|   |      | Lab Report Number<br>Field ID<br>Sampled Date/Time | 629653<br>MW02<br>23/11/2018 | 629653<br>QA100<br>23/11/2018 | RPD | 629653<br>MW02<br>23/11/2018 | ES1835239<br>QA200<br>23/11/2018 | RPD |
|---|------|--|------------------------------|-------------------------------|-----|------------------------------|----------------------------------|-----|
| Solvents  |      |  |                              |                               |     |                              |                                  |     |
| Methyl Ethyl Ketone   | µg/l | 1 : 50 (Interlab)                                  | <1                           | <1                            | 0   | <1                           | <50                              | 0   |
| 4-Methyl-2-pentanone  | µg/l | 1 : 50 (Interlab)                                  | <1                           | <1                            | 0   | <1                           | <50                              | 0   |
| Acetone   | µg/l | 1  | <1                           | <1                            | 0   | <1                           |                                  |     |
| Allyl chloride  | µg/l | 1  | <1                           | <1                            | 0   | <1                           |                                  |     |
| Carbon disulfide  | µg/l | 1 : 5 (Interlab)                                   | <1                           | <1                            | 0   | <1                           | <5                               | 0   |
| Perfluorocarbons  |      |  |                              |                               |     |                              |                                  |     |
| 2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE) | mg/l | 5e-005   | <0.00005                     | <0.00005                      | 0   | <0.00005                     | < 0.00005                        | 0   |
| Perfluorobutane sulfonic acid (PFBS)                          | μg/L | 0.01 : 0.02 (Interlab)                             | <0.01                        | <0.01                         | 0   | <0.01                        | < 0.02                           | 0   |
| Perfluoropentane sulfonic acid (PFPeS)                        | μg/L | 0.01 : 0.02 (Interlab)                             | <0.01                        | <0.01                         | 0   | <0.01                        | < 0.02                           | 0   |
| Perfluorohexane sulfonic acid (PFHxS)                         | μg/L | 0.01 : 0.02 (Interlab)                             | <0.01                        | <0.01                         | 0   | <0.01                        | < 0.02                           | 0   |
| Perfluoroheptane sulfonic acid (PFHpS)                        | μg/L | 0.01 : 0.02 (Interlab)                             | <0.01                        | <0.01                         | 0   | <0.01                        | < 0.02                           | 0   |
| Perfluorooctane sulfonic acid (PFOS)                          | µg/L | 0.01   | <0.01                        | <0.01                         | 0   | <0.01                        | < 0.01                           | 0   |
| Perfluorodecanesulfonic acid (PFDS)                           | μg/L | 0.01 : 0.02 (Interlab)                             | <0.01                        | <0.01                         | 0   | <0.01                        | < 0.02                           | 0   |
| Perfluorobutanoic acid (PFBA)                                 | μg/L | 0.05 : 0.1 (Interlab)                              | < 0.05                       | <0.05                         | 0   | <0.05                        | <0.1                             | 0   |
| Perfluoropentanoic acid (PFPeA)                               | μg/L | 0.01 : 0.02 (Interlab)                             | <0.01                        | <0.01                         | 0   | <0.01                        | < 0.02                           | 0   |
| Perfluorohexanoic acid (PFHxA)                                | μg/L | 0.01 : 0.02 (Interlab)                             | <0.01                        | <0.01                         | 0   | <0.01                        | <0.02                            | 0   |
| Perfluoroheptanoic acid (PFHpA)                               | µg/L | 0.01 : 0.02 (Interlab)                             | <0.01                        | <0.01                         | 0   | <0.01                        | <0.02                            | 0   |
| Perfluorooctanoate (PFOA)                                     | μg/L | 0.01   | <0.01                        | <0.01                         | 0   | <0.01                        | <0.01                            | 0   |
| Perfluorononanoic acid (PFNA)                                 | μg/L | 0.01 : 0.02 (Interlab)                             | <0.01                        | <0.01                         | 0   | <0.01                        | <0.02                            | 0   |
| Perfluorodecanoic acid (PFDA)                                 | µg/L | 0.01 : 0.02 (Interlab)                             | <0.01                        | <0.01                         | 0   | <0.01                        | < 0.02                           | 0   |
| Perfluoroundecanoic acid (PFUnDA)                             | μg/L | 0.01 : 0.02 (Interlab)                             | <0.01                        | <0.01                         | 0   | <0.01                        | < 0.02                           | 0   |
| Perfluorododecanoic acid (PFDoDA)                             | μg/L | 0.01 : 0.02 (Interlab)                             | <0.01                        | <0.01                         | 0   | <0.01                        | <0.02                            | 0   |
| Perfluorotridecanoic acid (PFTrDA)                            | μg/L | 0.01 : 0.02 (Interlab)                             | <0.01                        | <0.01                         | 0   | <0.01                        | <0.02                            | 0   |
| Perfluorotetradecanoic acid (PFTeDA)                          | μg/L | 0.01 : 0.05 (Interlab)                             | <0.01                        | <0.01                         | 0   | <0.01                        | <0.05                            | 0   |
| Perfluorooctane sulfonamide (FOSA)                            | μg/L | 0.05 : 0.02 (Interlab)                             | <0.05                        | <0.05                         | 0   | <0.05                        | <0.02                            | 0   |
| N-Methyl perfluorooctane sulfonamide (MeFOSA)                 | μg/L | 0.05   | < 0.05                       | <0.05                         | 0   | <0.05                        | < 0.05                           | 0   |
| N-Ethyl perfluorooctane sulfonamide (EtFOSA)                  | μg/L | 0.05   | <0.05                        | <0.05                         | 0   | <0.05                        | < 0.05                           | 0   |
| N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)           | μg/L | 0.05   | <0.05                        | <0.05                         | 0   | <0.05                        | < 0.05                           | 0   |
| N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)     | µg/L | 0.05 : 0.02 (Interlab)                             | < 0.05                       | <0.05                         | 0   | <0.05                        | < 0.02                           | 0   |
| N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)      | µg/L | 0.05 : 0.02 (Interlab)                             | <0.05                        | <0.05                         | 0   | <0.05                        | <0.02                            | 0   |
| 4:2 Fluorotelomer sulfonic acid (4:2 FTS)                     | µg/L | 0.01 : 0.05 (Interlab)                             | <0.01                        | <0.01                         | 0   | <0.01                        | < 0.05                           | 0   |
| 6:2 Fluorotelomer Sulfonate (6:2 FtS)                         | µg/L | 0.05   | <0.05                        | <0.05                         | 0   | <0.05                        | <0.05                            | 0   |
| 8:2 Fluorotelomer sulfonate (8:2 FtS)                         | μg/L | 0.01 : 0.05 (Interlab)                             | <0.01                        | <0.01                         | 0   | <0.01                        | <0.05                            | 0   |
| 10:2 Fluorotelomer sulfonic acid (10:2 FTS)                   | μg/L | 0.01 : 0.05 (Interlab)                             | < 0.01                       | <0.01                         | 0   | <0.01                        | <0.05                            | 0   |
| Sum of PFAS   | μg/L | 0.1 : 0.01 (Interlab)                              | <0.1                         | <0.1                          | 0   | <0.1                         | <0.01                            | 0   |
| Sum of PFAS (WA DER List)                                     | μg/L | 0.05 : 0.01 (Interlab)                             | < 0.05                       | < 0.05                        | 0   | < 0.05                       | <0.01                            | 0   |
| Sum of PFHxS and PFOS   | µq/L | 0.01   | < 0.01                       | < 0.01                        | 0   | < 0.01                       | < 0.01                           | 0   |

RPD Duplicates Acceptance Criteria is 30% In calculating the RPD values, the following protocols are adopted:-Where both concentrations are above laboratory reporting limits the RPD formula is used;

Where both concentrations are below the laboratory reporting limits, no RPD is calculated; and

\*\*\*Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

#### **DWP** Architects Pyrmont NSW

|           | A        | В              | С            | D                  | E                            | F            | G             | Н            |               | J                                     | K             | L     |          |  |
|-----------|----------|----------------|--------------|--------------------|------------------------------|--------------|---------------|--------------|---------------|---------------------------------------|---------------|-------|----------|--|
| 1         |          |                |              | U                  | CL Statis                    | tics for Unc | ensored Full  | Data Sets    |               |                                       |               |       |          |  |
| 2         |          |                |              |                    |                              |              | 004 050/ 117  |              | 11-4          |                                       |               |       |          |  |
| 3         |          | User Selec     | cted Options | Kyeemagh Infar     | its Schoo                    | DI: TRH C16  | -C34 85% UC   | CL Excluding | Hotspots      |                                       |               |       |          |  |
| 4         | Da       | te/Time of Co  |              | ProUCL 5.112/1     | 2/2018 5                     | :18:13 PM    | 4550          |              |               |                                       |               |       |          |  |
| 5         |          |                | From File    | 627289, 628416     | 5, ES183                     | 3866, ES18   | 34552         |              |               |                                       |               |       |          |  |
| 6         |          | Ful            |              | OFF                |                              |              |               |              |               |                                       |               |       |          |  |
| 7         |          | Confidence     | Coefficient  | 95%                |                              |              |               |              |               |                                       |               |       |          |  |
| 8         | Number o | of Bootstrap ( | Operations   | 2000               |                              |              |               |              |               |                                       |               |       |          |  |
| 9         |          |                |              |                    |                              |              |               |              |               |                                       |               |       |          |  |
| 10        | <u></u>  |                |              |                    |                              |              |               |              |               |                                       |               |       |          |  |
| 11        | CU       |                |              |                    |                              |              |               |              |               |                                       |               |       |          |  |
| 12        |          |                |              |                    |                              | Canaral      | Ototiotica    |              |               |                                       |               |       |          |  |
| 13        |          |                | Tatal        | Number of Ober     |                              |              | Statistics    |              | Niumahaa      | r of Distingt O                       | haamatiana    | 4     |          |  |
| 14        |          |                | Iotai        | Number of Obse     | ervations                    | 31           |               |              | Numbe         | r of Distinct O                       | bservations   | 4     |          |  |
| 15        |          |                |              |                    | A:                           | 100          |               |              | Number        | r of Missing O                        | bservations   | 0     |          |  |
| 16        |          |                |              | р<br>              | /iinimum                     | 100          |               |              |               |                                       | Median        | 114.5 | )        |  |
| 17        |          |                |              | IV                 | laximum                      | 350          |               |              |               | 0.4 5                                 | Median        | 100   | 22       |  |
| 18        |          |                |              | 0                  | SD                           | 53.47        |               |              |               | Std. Er                               | ror of Mean   | 9.60  | J3<br>21 |  |
| 19        |          |                |              | Coefficient of     | ariation                     | 0.467        |               |              |               |                                       | Skewness      | 3.90  | ונ       |  |
| 20        |          |                |              |                    |                              | Normal       |               |              |               |                                       |               |       |          |  |
| 21        |          |                |              | henine Mills Teet  | Ctatistic                    |              | GOF Test      |              | Chapira W/    |                                       |               |       |          |  |
| 22        |          |                | 5            | napiro Wilk Test   | Statistic                    | 0.308        |               | Data Na      |               |                                       |               |       |          |  |
| 23        |          |                | 5% 51        |                    | al value                     | 0.929        |               | Data No      | t Normal at : | 5% Significan                         | ce Level      |       |          |  |
| 24        |          |                | F            | Lilliefors Test    | Statistic                    | 0.51         |               | Data Na      |               |                                       |               |       |          |  |
| 25        |          |                | 5            | % Lillefors Critic | ai value                     | U. 150       | 0/ Significan |              | t Normal at : | 5% Significan                         | ce Levei      |       |          |  |
| 26        |          |                |              |                    | Data Not                     | Normal at :  | 5% Significar |              |               |                                       |               |       |          |  |
| 27        |          |                |              |                    | ٨٥                           | suming Nor   | mal Distribut | ion          |               |                                       |               |       |          |  |
| 28        |          |                | 05% No       |                    | Assuming Normal Distribution |              |               |              |               |                                       |               |       |          |  |
| 29        |          |                | 9070 NG      |                    | 's t LICI                    | 130.8        |               | 90%          |               |                                       | Chop 1005)    | 127 5 | :        |  |
| 30        |          |                |              | 35% Studen         | .5-1 00L                     | 150.8        |               |              | 95% Modifi    |                                       | ncon 1078)    | 137.5 | ,        |  |
| 31        |          |                |              |                    |                              |              |               |              |               |                                       | 113011-1370)  | 101.0 |          |  |
| 32        |          |                |              |                    |                              | Gamma        | GOF Test      |              |               |                                       |               |       |          |  |
| 33        |          |                |              | A-D Test           | Statistic                    | 10.01        |               | Ander        | son-Darling   | Gamma GO                              | F Test        |       |          |  |
| 34        |          |                |              | 5% A-D Critic      | al Value                     | 0 746        | D             | ata Not Gam  | ma Distribut  | red at 5% Sign                        | nificance Lev | el    |          |  |
| 35        |          |                |              | K-S Test           | Statistic                    | 0.519        |               | Kolmon       | orov-Smirne   | ov Gamma G                            | OF Test       | ~•    |          |  |
| 00<br>27  |          |                |              | 5% K-S Critic      | al Value                     | 0.158        | D             | ata Not Gam  | ma Distribut  | ed at 5% Sigr                         | nificance Lev | 'el   |          |  |
| ა/<br>აი  |          |                |              | Data N             | lot Gam                      | na Distribut | ed at 5% Sig  | nificance Le | vel           | · · · · · · · · · · · · · · · · · · · |               |       |          |  |
| 30<br>20  |          |                |              |                    |                              |              |               |              |               |                                       |               |       |          |  |
| 39<br>40  | l        |                |              |                    |                              | Gamma        | Statistics    |              |               |                                       |               |       |          |  |
| 40<br>/1  |          |                |              | k h                | at (MLE)                     | 9.316        |               |              | k             | star (bias corr                       | rected MLE)   | 8.43  | 36       |  |
| 41        |          |                |              | Theta h            | at (MLE)                     | 12.29        |               |              | Theta         | star (bias corr                       | rected MLE)   | 13.5  | 7        |  |
| 42        |          |                |              | nu h               | at (MLE)                     | 577.6        |               |              |               | nu star (bia                          | s corrected)  | 523   |          |  |
| 43<br>11  |          |                | MI           | LE Mean (bias co   | orrected)                    | 114.5        |               |              |               | MLE Sd (bia                           | s corrected)  | 39.4  | 3        |  |
| 44        |          |                |              |                    | )                            |              |               |              | Approximate   | Chi Square                            | Value (0.05)  | 471   |          |  |
| 40        |          |                | Adjus        | sted Level of Siar | nificance                    | 0.0413       |               |              | A             | djusted Chi So                        | quare Value   | 468.3 |          |  |
| 40        |          |                | .,           | 9.                 |                              | -            | 1             |              |               |                                       |               |       |          |  |
| 4/<br>/2  | l        |                |              |                    | As                           | suming Gan   | nma Distribut | tion         |               |                                       |               |       |          |  |
| 40<br>∕10 | 9        | 5% Approxin    | nate Gamma   | UCL (use when      | n>=50))                      | 127.2        |               | 95% Ad       | justed Gamr   | ma UCL (use                           | when n<50)    | 127.9 | )        |  |
| 49<br>50  |          | 1. I           |              | (                  | //                           |              | <u> </u>      |              | ,             | - (                                   |               |       |          |  |
| 50        |          |                |              |                    |                              |              |               |              |               |                                       |               |       |          |  |

|    | А  | В            | С              | D              | E              | F              | G                         | Н               |               | J              | K                | L     |  |
|----|----|--------------|----------------|----------------|----------------|----------------|---------------------------|-----------------|---------------|----------------|------------------|-------|--|
| 51 |    |              |                |                |                | Lognorma       | GOF Test                  |                 |               |                |                  |       |  |
| 52 |    |              | S              | hapiro Wilk 7  | Fest Statistic | 0.322          |                           | Shap            | oiro Wilk Log | inormal GOF    | Test             |       |  |
| 53 |    |              | 5% S           | hapiro Wilk C  | Critical Value | 0.929          |                           | Data Not        | Lognormal a   | t 5% Significa | ance Level       |       |  |
| 54 |    |              |                | Lilliefors     | Fest Statistic | 0.515          |                           | Lil             | liefors Logno | ormal GOF T    | est              |       |  |
| 55 |    |              | 5              | % Lilliefors C | Critical Value | 0.156          |                           | Data Not        | Lognormal a   | t 5% Significa | ance Level       |       |  |
| 56 |    |              |                |                | Data Not L     | .ognormal at   | 5% Significa              | ance Level      |               |                |                  |       |  |
| 57 |    |              |                |                |                |                |                           |                 |               |                |                  |       |  |
| 58 |    |              |                |                |                | Lognorma       | I Statistics              |                 |               |                |                  |       |  |
| 59 |    |              |                | Minimum of l   | _ogged Data    | 4.605          |                           |                 |               | Mean of        | logged Data      | 4.686 |  |
| 60 |    |              | Ν              | Maximum of L   | _ogged Data    | 5.858          |                           |                 |               | SD of          | logged Data      | 0.284 |  |
| 61 |    |              |                |                |                |                |                           |                 |               |                |                  |       |  |
| 62 |    |              |                |                | Assi           | uming Logno    | ormal Distribu            | ution           |               |                |                  |       |  |
| 63 |    |              |                |                | 95% H-UCL      | 123.8          |                           |                 | 90%           | Chebyshev (I   | MVUE) UCL        | 130.3 |  |
| 64 |    |              | 95%            | Chebyshev (    | MVUE) UCL      | 138.2          |                           |                 | 97.5%         | Chebyshev (I   | MVUE) UCL        | 149.2 |  |
| 65 |    |              | 99%            | Chebyshev (    | MVUE) UCL      | 170.8          |                           |                 |               |                |                  |       |  |
| 66 |    |              |                |                |                |                |                           |                 |               |                |                  |       |  |
| 67 |    |              |                |                | Nonparame      | etric Distribu | tion Free UC              | L Statistics    |               |                |                  |       |  |
| 68 |    |              |                | ſ              | Data do not f  | ollow a Disc   | ernible Distri            | ibution (0.05   | 5)            |                |                  |       |  |
| 69 |    |              |                |                |                |                |                           |                 |               |                |                  |       |  |
| 70 |    |              |                |                | Nonpa          | rametric Dist  | tribution Free            | e UCLs          |               |                |                  |       |  |
| 71 |    |              |                | 95             | 5% CLT UCL     | 130.3          |                           |                 |               | 95% Ja         | ckknife UCL      | 130.8 |  |
| 72 |    |              | 95%            | Standard Bo    | otstrap UCL    | N/A            |                           |                 |               | 95% Boo        | tstrap-t UCL     | N/A   |  |
| 73 |    |              | 9              | 5% Hall's Bo   | otstrap UCL    | N/A            |                           |                 | 95% I         | Percentile Bo  | otstrap UCL      | N/A   |  |
| 74 |    |              |                | 95% BCA Bo     | otstrap UCL    | N/A            |                           |                 |               |                |                  |       |  |
| 75 |    |              | 90% Ch         | ebyshev(Me     | an, Sd) UCL    | 143.3          |                           |                 | 95% Ch        | ebyshev(Me     | an, Sd) UCL      | 156.4 |  |
| 76 |    |              | 97.5% Ch       | ebyshev(Me     | an, Sd) UCL    | 174.5          |                           |                 | 99% Ch        | ebyshev(Me     | an, Sd) UCL      | 210.1 |  |
| 77 |    |              |                |                |                |                |                           |                 |               |                |                  |       |  |
| 78 |    |              |                |                |                | Suggested      | UCL to Use                |                 |               |                |                  |       |  |
| 79 |    |              |                | 95% Stu        | dent's-t UCL   | 130.8          | 8 or 95% Modified-t UCL 1 |                 |               |                |                  |       |  |
| 80 |    |              |                |                |                |                |                           |                 |               |                |                  |       |  |
| 81 | I  | Note: Sugges | stions regard  | ling the selec | tion of a 95%  | 6 UCL are pr   | ovided to help            | p the user to   | select the m  | nost appropria | ate 95% UCL      | •     |  |
| 82 |    |              | F              | Recommenda     | ations are bas | sed upon dat   | a size, data c            | distribution, a | and skewnes   | S.             |                  |       |  |
| 83 |    | These recor  | nmendations    | s are based ι  | pon the resu   | Its of the sim | ulation studie            | es summariz     | ed in Singh,  | Maichle, and   | Lee (2006).      |       |  |
| 84 | Но | wever, simu  | lations result | s will not cov | ver all Real W | /orld data se  | ts; for additio           | nal insight th  | ne user may   | want to consi  | ult a statistici | an.   |  |
| 85 |    |              |                |                |                |                |                           |                 |               |                |                  |       |  |

|    | A         | В             | С            | D                  | E           | F             | G             | Н             |               | J               | K             | L     |     |
|----|-----------|---------------|--------------|--------------------|-------------|---------------|---------------|---------------|---------------|-----------------|---------------|-------|-----|
| 1  |           |               |              | L                  | JCL Statis  | tics for Unc  | ensored Ful   | Data Sets     |               |                 |               |       |     |
| 2  |           |               |              |                    |             |               |               |               |               |                 |               |       |     |
| 3  |           | User Sele     | cted Options | Kyeemagh Infa      | nts Schoo   | ol: Nickel 95 | % UCL Exclu   | iding Hotspot | S             |                 |               |       |     |
| 4  | Da        | te/Time of Co | omputation   | ProUCL 5.112/      | 12/2018 3   | :11:33 PM     |               |               |               |                 |               |       |     |
| 5  |           |               | From File    | 627289, 62841      | 6, ES183    | 3866, ES183   | 34552         |               |               |                 |               |       |     |
| 6  |           | Ful           | II Precision | OFF                |             |               |               |               |               |                 |               |       |     |
| 7  |           | Confidence    | Coefficient  | 95%                |             |               |               |               |               |                 |               | -     |     |
| 8  | Number of | of Bootstrap  | Operations   | 2000               |             |               |               |               |               |                 |               |       |     |
| 9  |           |               |              | 1                  |             |               |               |               |               |                 |               |       |     |
| 10 |           |               |              |                    |             |               |               |               |               |                 |               |       |     |
| 11 | C0        |               |              |                    |             |               |               |               |               |                 |               |       |     |
| 12 |           |               |              |                    |             |               |               |               |               |                 |               |       |     |
| 13 |           |               |              |                    |             | General       | Statistics    |               |               |                 |               |       |     |
| 14 |           |               | Total        | Number of Obs      | ervations   | 30            |               |               | Numbe         | r of Distinct C | bservations   | 6     |     |
| 15 |           |               |              |                    |             |               |               |               | Number        | of Missing C    | bservations   | 0     |     |
| 16 |           |               |              |                    | Minimum     | 2             |               |               |               |                 | Mean          | 6.2   | .87 |
| 17 |           |               |              | Ν                  | Maximum     | 17            |               |               |               |                 | Median        | 5     |     |
| 12 |           |               |              |                    | SD          | 3.702         |               |               |               | Std. E          | rror of Mean  | 0.6   | 576 |
| 19 |           |               |              | Coefficient of     | Variation   | 0.589         |               |               |               |                 | Skewness      | 1.9   | 55  |
| 20 |           |               |              |                    |             |               | I             |               |               |                 |               |       |     |
| 20 |           |               |              |                    |             | Normal        | GOF Test      |               |               |                 |               |       |     |
| 21 |           |               | S            | hapiro Wilk Tes    | t Statistic | 0.587         |               |               | Shapiro Wi    | lk GOF Test     |               |       |     |
| 22 |           |               | 5% S         | hapiro Wilk Criti  | cal Value   | 0.927         |               | Data No       | t Normal at § | 5% Significan   | ce Level      |       |     |
| 20 |           |               |              | Lilliefors Tes     | t Statistic | 0.469         |               |               | Lilliefors    | GOF Test        |               |       |     |
| 24 |           |               | 5            | % Lilliefors Criti | cal Value   | 0.159         |               | Data No       | t Normal at § | 5% Significan   | ce Level      |       |     |
| 26 |           |               |              |                    | Data Not    | Normal at 5   | 5% Significa  | nce Level     |               |                 |               |       |     |
| 27 |           |               |              |                    |             |               |               |               |               |                 |               |       |     |
| 28 |           |               |              |                    | As          | suming Nor    | mal Distribut | ion           |               |                 |               |       |     |
| 29 |           |               | 95% No       | ormal UCL          |             |               |               | 95%           | UCLs (Adju    | sted for Skew   | wness)        |       |     |
| 30 |           |               |              | 95% Studen         | nt's-t UCL  | 7.435         |               | !             | 95% Adjuste   | d-CLT UCL (     | Chen-1995)    | 7.6   | 56  |
| 31 |           |               |              |                    |             |               |               |               | 95% Modifie   | ed-t UCL (Joh   | nnson-1978)   | 7.4   | 75  |
| 32 |           |               |              |                    |             |               |               |               |               |                 |               |       |     |
| 33 |           |               |              |                    |             | Gamma         | GOF Test      |               |               |                 |               |       |     |
| 34 |           |               |              | A-D Tes            | t Statistic | 5.738         |               | Ander         | son-Darling   | Gamma GO        | F Test        |       |     |
| 35 |           |               |              | 5% A-D Criti       | cal Value   | 0.749         | D             | ata Not Gam   | ma Distribut  | ed at 5% Sigi   | nificance Lev | el    |     |
| 36 |           |               |              | K-S Tes            | t Statistic | 0.447         |               | Kolmog        | orov-Smirno   | ov Gamma G      | OF Test       |       |     |
| 37 |           |               |              | 5% K-S Criti       | cal Value   | 0.161         | D             | ata Not Gam   | ma Distribut  | ed at 5% Sigi   | nificance Lev | el    |     |
| 38 |           |               |              | Data               | Not Gamr    | na Distribut  | ed at 5% Sig  | nificance Le  | vel           |                 |               |       |     |
| 39 |           |               |              |                    |             |               |               |               |               |                 |               |       |     |
| 40 |           |               |              |                    |             | Gamma         | Statistics    |               |               |                 |               |       |     |
| 41 |           |               |              | k h                | nat (MLE)   | 4.243         |               |               | k :           | star (bias cor  | rected MLE)   | 3.8   | 341 |
| 42 |           |               |              | Theta h            | nat (MLE)   | 1.482         |               |               | Theta :       | star (bias cor  | rected MLE)   | 1.6   | 637 |
| 43 |           |               |              | nu h               | nat (MLE)   | 254.6         |               |               |               | nu star (bia    | s corrected)  | 230.4 | 4   |
| 44 |           |               | M            | LE Mean (bias c    | orrected)   | 6.287         |               |               |               | MLE Sd (bia     | s corrected)  | 3.2   | 208 |
| 45 |           |               |              |                    |             |               |               | 1             | Approximate   | Chi Square      | Value (0.05)  | 196.3 | 3   |
| 46 |           |               | Adjus        | sted Level of Sig  | nificance   | 0.041         |               |               | Ac            | djusted Chi S   | quare Value   | 194.5 | 5   |
| 47 |           |               |              |                    |             |               |               |               |               |                 |               |       |     |
| 48 |           |               |              |                    | Ass         | suming Gam    | nma Distribu  | tion          |               |                 |               |       |     |
| 49 | g         | 5% Approxir   | nate Gamma   | UCL (use wher      | n n>=50))   | 7.38          |               | 95% Ad        | justed Gamr   | na UCL (use     | when n<50)    | 7.4   | 49  |
| 50 |           |               |              |                    |             |               |               |               |               |                 |               |       |     |

|    | А  | В           | С              | D               | E              | F              | G               | Н               |               | J              | K                | L     |
|----|----|-------------|----------------|-----------------|----------------|----------------|-----------------|-----------------|---------------|----------------|------------------|-------|
| 51 |    |             |                |                 |                | Lognormal      | GOF Test        |                 |               |                |                  |       |
| 52 |    |             | S              | hapiro Wilk 7   | Test Statistic | 0.672          |                 | Shap            | piro Wilk Log | inormal GOF    | Test             |       |
| 53 |    |             | 5% S           | hapiro Wilk C   | Critical Value | 0.927          |                 | Data Not        | Lognormal a   | t 5% Significa | ance Level       |       |
| 54 |    |             |                | Lilliefors 7    | Fest Statistic | 0.422          |                 | Lil             | liefors Logn  | ormal GOF T    | est              |       |
| 55 |    |             | 5              | % Lilliefors C  | Critical Value | 0.159          |                 | Data Not        | Lognormal a   | t 5% Significa | ance Level       |       |
| 56 |    |             |                |                 | Data Not L     | ognormal at    | 5% Significa    | ance Level      |               |                |                  |       |
| 57 |    |             |                |                 |                |                |                 |                 |               |                |                  |       |
| 58 |    |             |                |                 |                | Lognorma       | I Statistics    |                 |               |                |                  |       |
| 59 |    |             |                | Minimum of l    | Logged Data    | 0.693          |                 |                 |               | Mean of        | logged Data      | 1.716 |
| 60 |    |             | Ν              | Maximum of L    | Logged Data    | 2.833          |                 |                 |               | SD of          | logged Data      | 0.477 |
| 61 |    |             |                |                 |                |                |                 |                 |               |                |                  |       |
| 62 |    |             |                |                 | Assı           | uming Logno    | rmal Distribu   | ution           |               |                |                  |       |
| 63 |    |             |                |                 | 95% H-UCL      | 7.394          |                 |                 | 90%           | Chebyshev (    | MVUE) UCL        | 7.89  |
| 64 |    |             | 95%            | Chebyshev (     | MVUE) UCL      | 8.654          |                 |                 | 97.5%         | Chebyshev (    | MVUE) UCL        | 9.713 |
| 65 |    |             | 99%            | Chebyshev (     | MVUE) UCL      | 11.79          |                 |                 |               |                |                  |       |
| 66 |    |             |                |                 |                |                |                 |                 |               |                |                  |       |
| 67 |    |             |                |                 | Nonparame      | etric Distribu | tion Free UC    | L Statistics    |               |                |                  |       |
| 68 |    |             |                |                 | Data do not f  | ollow a Disc   | ernible Distri  | ibution (0.05   | 5)            |                |                  |       |
| 69 |    |             |                |                 |                |                |                 |                 |               |                |                  |       |
| 70 |    |             |                |                 | Nonpa          | rametric Dist  | tribution Free  | e UCLs          |               |                |                  |       |
| 71 |    |             |                | 95              | 5% CLT UCL     | 7.398          |                 |                 |               | 95% Ja         | ckknife UCL      | 7.435 |
| 72 |    |             | 95%            | Standard Bo     | ootstrap UCL   | 7.375          |                 |                 |               | 95% Boo        | tstrap-t UCL     | 7.903 |
| 73 |    |             | 9              | 5% Hall's Bo    | ootstrap UCL   | 7.467          |                 |                 | 95% I         | Percentile Bo  | otstrap UCL      | 7.387 |
| 74 |    |             |                | 95% BCA Bo      | ootstrap UCL   | 7.653          |                 |                 |               |                |                  |       |
| 75 |    |             | 90% Ch         | ebyshev(Me      | an, Sd) UCL    | 8.314          |                 |                 | 95% Ch        | ebyshev(Me     | an, Sd) UCL      | 9.233 |
| 76 |    |             | 97.5% Ch       | ebyshev(Me      | an, Sd) UCL    | 10.51          |                 |                 | 99% Ch        | ebyshev(Me     | an, Sd) UCL      | 13.01 |
| 77 |    |             |                |                 |                |                |                 |                 |               |                |                  |       |
| 78 |    |             |                |                 |                | Suggested      | UCL to Use      |                 |               |                |                  |       |
| 79 |    |             |                | 95% Stu         | dent's-t UCL   | 7.435          |                 |                 |               | or 95% Mo      | dified-t UCL     | 7.475 |
| 80 |    |             |                |                 |                |                |                 |                 |               |                |                  |       |
| 81 |    | Note: Sugge | stions regard  | ling the selec  | ction of a 95% | UCL are pro    | ovided to help  | p the user to   | select the m  | nost appropria | ate 95% UCL      | •     |
| 82 |    |             | F              | Recommenda      | ations are bas | sed upon dat   | a size, data c  | distribution, a | and skewnes   | S.             |                  |       |
| 83 |    | These recor | mmendations    | s are based ι   | pon the resu   | Its of the sim | ulation studie  | es summariz     | ed in Singh,  | Maichle, and   | d Lee (2006).    |       |
| 84 | Ho | wever, simu | lations result | ts will not cov | ver all Real W | orld data set  | ts; for additio | nal insight th  | ne user may   | want to cons   | ult a statistici | an.   |
| 85 |    |             |                |                 |                |                |                 |                 |               |                |                  |       |

|          | А         | В              | С            | D                         | E                 | F             | G              | Н            |               | J               | K             | L        |
|----------|-----------|----------------|--------------|---------------------------|-------------------|---------------|----------------|--------------|---------------|-----------------|---------------|----------|
| 1        |           |                |              |                           | UCL Statis        | tics for Unc  | ensored Full   | Data Sets    |               |                 |               |          |
| 2        |           |                |              | 1                         |                   |               |                |              |               |                 |               |          |
| 3        |           | User Sele      | cted Options | Kyeemagh Infa             | atns Schoo        | l: B(a)P In F | ill Material 9 | 5% UCL       |               |                 |               |          |
| 4        | Da        | te/Time of Co  | omputation   | ProUCL 5.112              | /12/2018 3        | :16:45 PM     |                |              |               |                 |               |          |
| 5        |           |                | From File    | 627289, 6284 <sup>-</sup> | 16, ES1833        | 8866, ES183   | 34552          |              |               |                 |               |          |
| 6        |           | Ful            | Il Precision | OFF                       |                   |               |                |              |               |                 |               |          |
| 7        |           | Confidence     | Coefficient  | 95%                       |                   |               |                |              |               |                 |               |          |
| 8        | Number of | of Bootstrap ( | Operations   | 2000                      |                   |               |                |              |               |                 |               |          |
| 9        |           |                |              |                           |                   |               |                |              |               |                 |               |          |
| 10       |           |                |              |                           |                   |               |                |              |               |                 |               |          |
| 11       | CO        |                |              |                           |                   |               |                |              |               |                 |               |          |
| 12       |           |                |              |                           |                   | 0             | 0              |              |               |                 |               |          |
| 13       |           |                | Tatal        | Number of Obs             |                   | General       | Statistics     |              | N I           |                 |               | 2        |
| 14       |           |                | lotal        | Number of Obs             | servations        | 41            |                |              | Numbe         | r of Distinct O | bservations   | 3        |
| 15       |           |                |              |                           | NA:               | 0.5           |                |              | Number        | r of Missing O  | bservations   | 0        |
| 16       |           |                |              |                           | winimum           | 0.5           |                |              |               |                 | Wedier        | 0.515    |
| 17       |           |                |              |                           |                   | 0.9           |                |              |               | 011 L-          | iviedian      | 0.0100   |
| 18       |           |                |              | Coofficient               | 5D<br>f.Voriotian | 0.0091        |                |              |               | Stu. Er         | Skowraat      | U.U I Uð |
| 19       |           |                |              | Coefficient of            | rvariation        | 0.134         |                |              |               |                 | Skewness      | 5.047    |
| 20       |           |                |              |                           |                   | Normal (      |                |              |               |                 |               |          |
| 21       |           |                |              | honiro Wilk Tor           | at Statistic      | 0.225         |                |              | Shapira Wi    |                 |               |          |
| 22       |           |                | 50/ C        |                           |                   | 0.235         |                | Data Na      | + Normal at l |                 |               |          |
| 23       |           |                | 5% 5         |                           |                   | 0.941         |                | Data No      |               |                 |               |          |
| 24       |           |                | 5            | Lilliefors Crit           | tical Value       | 0.555         |                | Data No      | t Normal at   | 5% Significant  |               |          |
| 25       |           |                | 5            |                           | Data Not          | Normal at F   | % Significar   |              |               |                 |               |          |
| 26       |           |                |              |                           | Data Not          |               |                |              |               |                 |               |          |
| 27       |           |                |              |                           | ۵۹                | sumina Nor    | mal Distribut  | ion          |               |                 |               |          |
| 28       |           |                | 95% No       | ormal UCL                 | 7.00              |               |                | 95%          | UCLs (Adiu    | isted for Skev  | vness)        |          |
| 29       |           |                |              | 95% Stude                 | nt's-t UCL        | 0.533         |                |              | 95% Adjuste   | ed-CLT UCL (    | Chen-1995)    | 0.541    |
| 3U<br>21 |           |                |              |                           |                   |               |                |              | 95% Modifi    | ed-t UCL (Joh   | nson-1978)    | 0.534    |
| 32       |           |                |              |                           |                   |               |                |              |               |                 | ,             |          |
| 32       |           |                |              |                           |                   | Gamma         | GOF Test       |              |               |                 |               |          |
| 34       |           |                |              | A-D Tes                   | st Statistic      | 14.49         |                | Ander        | son-Darling   | Gamma GOF       | - Test        |          |
| 35       |           |                |              | 5% A-D Crit               | ical Value        | 0.747         | D              | ata Not Gam  | ma Distribut  | ed at 5% Sigr   | nificance Lev | el       |
| 36       |           |                |              | K-S Tes                   | st Statistic      | 0.538         |                | Kolmog       | orov-Smirno   | ov Gamma GO     | OF Test       |          |
| 37       |           |                |              | 5% K-S Crit               | ical Value        | 0.137         | D              | ata Not Gam  | ma Distribut  | ed at 5% Sigr   | nificance Lev | el       |
| 38       |           |                |              | Data                      | Not Gamm          | na Distribut  | ed at 5% Sig   | nificance Le | vel           |                 |               |          |
| 39       |           |                |              |                           |                   |               |                |              |               |                 |               |          |
| 40       |           |                |              |                           |                   | Gamma         | Statistics     |              |               |                 |               |          |
| 41       |           |                |              | k                         | hat (MLE)         | 79.47         |                |              | k             | star (bias corr | ected MLE)    | 73.67    |
| 42       |           |                |              | Theta                     | hat (MLE)         | 0.00648       |                |              | Theta         | star (bias corr | ected MLE)    | 0.00699  |
| 43       |           |                |              | nu                        | hat (MLE)         | 6516          |                |              |               | nu star (bias   | s corrected)  | 6041     |
| 44       |           |                | MI           | E Mean (bias o            | corrected)        | 0.515         |                |              |               | MLE Sd (bias    | s corrected)  | 0.06     |
| 45       |           |                |              |                           | L. L. L.          |               |                |              | Approximate   | e Chi Square \  | /alue (0.05)  | 5861     |
| 46       |           |                | Adjus        | sted Level of Sig         | gnificance        | 0.0441        |                |              | A             | djusted Chi So  | quare Value   | 5855     |
| 47       |           |                |              |                           |                   |               |                |              |               |                 |               |          |
| 48       |           |                |              |                           | Ass               | uming Gam     | nma Distribut  | tion         |               |                 |               |          |
| 49       | 9         | 5% Approxin    | nate Gamma   | UCL (use whe              | n n>=50))         | 0.53          |                | 95% Ad       | justed Gamr   | ma UCL (use v   | when n<50)    | 0.531    |
| 50       |           |                |              |                           |                   |               |                |              |               |                 |               |          |

|    | А  | В            | С              | D               | E              | F                                | G                | Н               |               | J              | К                 | L      |  |  |  |
|----|----|--------------|----------------|-----------------|----------------|----------------------------------|------------------|-----------------|---------------|----------------|-------------------|--------|--|--|--|
| 51 |    |              |                |                 |                | Lognorma                         | GOF Test         |                 |               |                |                   |        |  |  |  |
| 52 |    |              | S              | hapiro Wilk T   | Fest Statistic | 0.238                            |                  | Shap            | oiro Wilk Log | normal GOF     | Test              |        |  |  |  |
| 53 |    |              | 5% S           | hapiro Wilk C   | Critical Value | 0.941                            |                  | Data Not        | Lognormal a   | t 5% Significa | ance Level        |        |  |  |  |
| 54 |    |              |                | Lilliefors 7    | Fest Statistic | 0.537                            |                  | Lil             | liefors Logno | ormal GOF To   | est               |        |  |  |  |
| 55 |    |              | 5              | 5% Lilliefors C | Critical Value | 0.137                            |                  | Data Not        | Lognormal a   | t 5% Significa | ance Level        |        |  |  |  |
| 56 |    |              |                |                 | Data Not L     | ognormal at                      | 5% Significa     | ance Level      |               |                |                   |        |  |  |  |
| 57 |    |              |                |                 |                |                                  |                  |                 |               |                |                   |        |  |  |  |
| 58 |    |              |                |                 |                | Lognorma                         | I Statistics     |                 |               |                |                   |        |  |  |  |
| 59 |    |              |                | Minimum of L    | _ogged Data    | -0.693                           |                  |                 |               | Mean of I      | logged Data       | -0.671 |  |  |  |
| 60 |    |              | Ν              | /laximum of L   | _ogged Data    | -0.105                           |                  |                 |               | SD of I        | logged Data       | 0.105  |  |  |  |
| 61 |    |              |                |                 |                |                                  |                  |                 |               |                |                   |        |  |  |  |
| 62 |    |              |                |                 | Assı           | uming Logno                      | ormal Distribu   | ution           |               |                |                   |        |  |  |  |
| 63 |    |              |                |                 | 95% H-UCL      | 0.529                            |                  |                 | 90%           | Chebyshev (N   | MVUE) UCL         | 0.539  |  |  |  |
| 64 |    |              | 95%            | Chebyshev (     | MVUE) UCL      | 0.551                            |                  |                 | 97.5%         | Chebyshev (N   | MVUE) UCL         | 0.567  |  |  |  |
| 65 |    |              | 99%            | Chebyshev (     | MVUE) UCL      | 0.598                            |                  |                 |               |                |                   |        |  |  |  |
| 66 |    |              |                |                 |                |                                  |                  |                 |               |                |                   |        |  |  |  |
| 67 |    |              |                |                 | Nonparame      | etric Distribu                   | tion Free UC     | L Statistics    |               |                |                   |        |  |  |  |
| 68 |    |              |                |                 | Data do not f  | ollow a Disc                     | ernible Distri   | ibution (0.05   | i)            |                |                   |        |  |  |  |
| 69 |    |              |                |                 |                |                                  |                  |                 |               |                |                   |        |  |  |  |
| 70 |    |              |                |                 | Nonpa          | arametric Distribution Free UCLs |                  |                 |               |                |                   |        |  |  |  |
| 71 |    |              |                | 95              | 5% CLT UCL     | 0.532                            |                  |                 |               | 95% Jao        | ckknife UCL       | 0.533  |  |  |  |
| 72 |    |              | 95%            | Standard Bo     | otstrap UCL    | N/A                              |                  |                 |               | 95% Boot       | tstrap-t UCL      | N/A    |  |  |  |
| 73 |    |              | 9              | 5% Hall's Bo    | otstrap UCL    | N/A                              |                  |                 | 95%           | Percentile Bo  | otstrap UCL       | N/A    |  |  |  |
| 74 |    |              | !              | 95% BCA Bo      | otstrap UCL    | N/A                              |                  |                 |               |                |                   |        |  |  |  |
| 75 |    |              | 90% Ch         | ebyshev(Me      | an, Sd) UCL    | 0.547                            |                  |                 | 95% Ch        | ebyshev(Mea    | an, Sd) UCL       | 0.562  |  |  |  |
| 76 |    |              | 97.5% Ch       | ebyshev(Me      | an, Sd) UCL    | 0.582                            |                  |                 | 99% Ch        | ebyshev(Mea    | an, Sd) UCL       | 0.622  |  |  |  |
| 77 |    |              |                |                 |                |                                  |                  |                 |               |                |                   |        |  |  |  |
| 78 |    |              |                |                 |                | Suggested                        | UCL to Use       |                 |               |                |                   |        |  |  |  |
| 79 |    |              |                | 95% Stu         | dent's-t UCL   | 0.533                            |                  |                 |               | or 95% Mo      | dified-t UCL      | 0.534  |  |  |  |
| 80 |    |              |                |                 |                |                                  |                  |                 |               |                |                   |        |  |  |  |
| 81 |    | Note: Sugge  | stions regard  | ing the selec   | tion of a 95%  | UCL are pro                      | ovided to help   | p the user to   | select the m  | nost appropria | ate 95% UCL       |        |  |  |  |
| 82 |    |              | F              | Recommenda      | ations are bas | sed upon dat                     | a size, data c   | distribution, a | and skewnes   | s.             |                   |        |  |  |  |
| 83 |    | These record | mmendations    | s are based u   | pon the resu   | Its of the sim                   | ulation studie   | es summariz     | ed in Singh,  | Maichle, and   | Lee (2006).       |        |  |  |  |
| 84 | Ho | owever, simu | lations result | s will not cov  | ver all Real W | orld data set                    | ts; for addition | nal insight th  | e user may    | want to consu  | ılt a statisticia | an.    |  |  |  |
| 85 |    |              |                |                 |                |                                  |                  |                 |               |                |                   |        |  |  |  |

|                | A         | В            | С            | D                  | E             | F             | G              | Н             |              | J              | K             | L       |
|----------------|-----------|--------------|--------------|--------------------|---------------|---------------|----------------|---------------|--------------|----------------|---------------|---------|
| 1              |           |              |              |                    | UCL Statis    | tics for Unc  | ensored Full   | Data Sets     |              |                |               |         |
| 2              |           |              |              |                    | <u> </u>      |               | 050(110)       |               |              |                |               |         |
| 3              |           | User Sele    | cted Options | Kyeemagh I         | ntants Schoo  |               | 195% UCL       |               |              |                |               |         |
| 4              | Da        | te/Time of C |              | ProUCL 5.1         |               | :50:02 AM     | 4550           |               |              |                |               |         |
| 5              |           | <b>F</b>     |              | 627289, 628<br>OFF | 416, ES183    | 3800, ES 183  | 4552           |               |              |                |               |         |
| 6              |           | Fu           |              |                    |               |               |                |               |              |                |               |         |
| 7              | Number    | of Pootstrop |              | 95%                |               |               |                |               |              |                |               |         |
| 8              | Number    | ы воогенар   | Operations   | 2000               |               |               |                |               |              |                |               |         |
| 9              |           |              |              |                    |               |               |                |               |              |                |               |         |
| 10             | <u>C0</u> |              |              |                    |               |               |                |               |              |                |               |         |
| 11             | 00        |              |              |                    |               |               |                |               |              |                |               |         |
| 12             |           |              |              |                    |               | General       | Statistics     |               |              |                |               |         |
| 13             |           |              | Total        | Number of O        | bservations   | 41            |                |               | Numbe        | r of Distinct  | Observations  | 10      |
| 14             |           |              |              |                    |               |               |                |               | Number       | r of Missing ( | Observations  | 0       |
| 15             |           |              |              |                    | Minimum       | 2             |                |               |              |                | Mean          | 9.329   |
| 10             |           |              |              |                    | Maximum       | 130           |                |               |              |                | Median        | 5       |
| 12             |           |              |              |                    | SD            | 19.92         |                |               |              | Std. E         | Error of Mean | 3.112   |
| 10             |           |              |              | Coefficient        | of Variation  | 2.136         |                |               |              |                | Skewness      | 5.869   |
| 20             |           |              |              |                    |               |               |                |               |              |                |               |         |
| 20             |           |              |              |                    |               | Normal (      | GOF Test       |               |              |                |               |         |
| 22             |           |              | S            | hapiro Wilk T      | est Statistic | 0.267         |                |               | Shapiro Wi   | ilk GOF Tes    | t             |         |
| 23             |           |              | 5% S         | hapiro Wilk C      | ritical Value | 0.941         |                | Data No       | t Normal at  | 5% Significa   | nce Level     |         |
| 24             |           |              |              | Lilliefors T       | est Statistic | 0.412         |                |               | Lilliefors   | GOF Test       |               |         |
| 25             |           |              | 5            | % Lilliefors C     | ritical Value | 0.137         |                | Data No       | t Normal at  | 5% Significa   | nce Level     |         |
| 26             |           |              |              |                    | Data Not      | Normal at 5   | % Significar   | ice Level     |              |                |               |         |
| 27             |           |              |              |                    |               |               |                |               |              |                |               |         |
| 28             |           |              |              |                    | As            | suming Nori   | nal Distributi | ion           |              |                |               |         |
| 29             |           |              | 95% No       | ormal UCL          |               |               |                | 95%           | UCLs (Adju   | isted for Ske  | wness)        |         |
| 30             |           |              |              | 95% Stud           | lent's-t UCL  | 14.57         |                | ļ             | 95% Adjuste  | ed-CLT UCL     | (Chen-1995)   | 17.49   |
| 31             |           |              |              |                    |               |               |                |               | 95% Modifi   | ed-t UCL (Jo   | hnson-1978)   | 15.04   |
| 32             |           |              |              |                    |               |               |                |               |              |                |               |         |
| 33             |           |              |              |                    |               | Gamma         | GOF Test       | <b>A</b>      |              | 0              |               |         |
| 34             |           |              |              |                    | est Statistic | 9.792         | D              |               | son-Darling  | Gamma GC       |               | <u></u> |
| 35             |           |              |              | ט% א-D U<br>עפי    | finical value | 0.772         |                |               |              |                |               |         |
| 36             |           |              |              | r-o i<br>5% k_s c  | ritical Value | 0.434         | ·٦             | nulliug       | ma Distribut | red at 5% Sid  |               | ما      |
| 37             |           |              |              | D2                 | ta Not Gam    | na Distribute | ed at 5% Sig   | nificance I e | vel          |                |               |         |
| 38             |           |              |              | 50                 |               |               |                |               |              |                |               |         |
| 39             |           |              |              |                    |               | Gamma         | Statistics     |               |              |                |               |         |
| 40             |           |              |              |                    | k hat (MLE)   | 1.249         |                |               | k            | star (bias co  | rrected MLE)  | 1.174   |
| 41<br>40       |           |              |              | Thet               | a hat (MLE)   | 7.469         |                |               | Theta        | star (bias co  | rrected MLE)  | 7.947   |
| 42<br>12       |           |              |              | n                  | u hat (MLE)   | 102.4         |                |               |              | nu star (bi    | as corrected) | 96.26   |
| 43<br>44       |           |              | M            | LE Mean (bia       | s corrected)  | 9.329         |                |               |              | MLE Sd (bi     | as corrected) | 8.611   |
| 45             |           |              |              |                    |               |               |                |               | Approximate  | e Chi Square   | Value (0.05)  | 74.63   |
| 46             |           |              | Adjus        | sted Level of      | Significance  | 0.0441        |                |               | Ad           | djusted Chi S  | Square Value  | 73.93   |
| 47             |           |              |              |                    |               |               | 1              |               |              |                |               |         |
|                |           |              |              |                    | As            | suming Gam    | ma Distribut   | ion           |              |                |               |         |
| 48             |           |              |              |                    |               | •             |                |               |              |                |               |         |
| 48<br>49       | g         | 95% Approxir | nate Gamma   | a UCL (use wi      | nen n>=50))   | 12.03         |                | 95% Ad        | usted Gamr   | ma UCL (use    | e when n<50)  | 12.15   |
| 48<br>49<br>50 | g         | 95% Approxir | mate Gamma   | a UCL (use wl      | nen n>=50))   | 12.03         |                | 95% Ad        | usted Gamr   | ma UCL (use    | e when n<50)  | 12.15   |

|    | А  | В            | С              | D               | E              | F              | G               | Н               |               | J              | К                 | L     |
|----|----|--------------|----------------|-----------------|----------------|----------------|-----------------|-----------------|---------------|----------------|-------------------|-------|
| 51 |    |              |                |                 |                | Lognormal      | GOF Test        |                 |               |                |                   |       |
| 52 |    |              | S              | hapiro Wilk     | Test Statistic | 0.561          |                 | Shap            | oiro Wilk Log | normal GOF     | Test              |       |
| 53 |    |              | 5% SI          | hapiro Wilk C   | Critical Value | 0.941          |                 | Data Not        | Lognormal a   | t 5% Significa | ance Level        |       |
| 54 |    |              |                | Lilliefors      | Test Statistic | 0.407          |                 | Lil             | liefors Logno | ormal GOF T    | est               |       |
| 55 |    |              | 5              | % Lilliefors C  | Critical Value | 0.137          |                 | Data Not        | Lognormal a   | t 5% Significa | ance Level        |       |
| 56 |    |              |                |                 | Data Not L     | ognormal at    | 5% Significa    | ance Level      |               |                |                   |       |
| 57 |    |              |                |                 |                |                |                 |                 |               |                |                   |       |
| 58 |    |              |                |                 |                | Lognorma       | I Statistics    |                 |               |                |                   |       |
| 59 |    |              |                | Minimum of I    | Logged Data    | 0.693          |                 |                 |               | Mean of        | logged Data       | 1.782 |
| 60 |    |              | Ν              | Maximum of I    | Logged Data    | 4.868          |                 |                 |               | SD of          | logged Data       | 0.67  |
| 61 |    |              |                |                 |                |                |                 |                 |               |                |                   |       |
| 62 |    |              |                |                 | Assu           | iming Logno    | rmal Distribu   | ution           |               |                |                   |       |
| 63 |    |              |                |                 | 95% H-UCL      | 9.218          |                 |                 | 90%           | Chebyshev (    | MVUE) UCL         | 9.897 |
| 64 |    |              | 95%            | Chebyshev (     | MVUE) UCL      | 11.03          |                 |                 | 97.5%         | Chebyshev (    | MVUE) UCL         | 12.61 |
| 65 |    |              | 99%            | Chebyshev (     | MVUE) UCL      | 15.71          |                 |                 |               |                |                   |       |
| 66 |    |              |                |                 |                |                |                 |                 |               |                | <u>.</u>          |       |
| 67 |    |              |                |                 | Nonparame      | tric Distribu  | tion Free UC    | L Statistics    |               |                |                   |       |
| 68 |    |              |                | I               | Data do not f  | ollow a Disc   | ernible Distri  | ibution (0.05   | 5)            |                |                   |       |
| 69 |    |              |                |                 |                |                |                 |                 |               |                |                   |       |
| 70 |    |              |                |                 | Nonpar         | ametric Dist   | ribution Free   | e UCLs          |               |                |                   |       |
| 71 |    |              |                | 95              | 5% CLT UCL     | 14.45          |                 |                 |               | 95% Ja         | ckknife UCL       | 14.57 |
| 72 |    |              | 95%            | Standard Bo     | ootstrap UCL   | 14.46          |                 |                 |               | 95% Boo        | tstrap-t UCL      | 41.15 |
| 73 |    |              | 9              | )5% Hall's Bo   | ootstrap UCL   | 32.88          |                 |                 | 95% I         | Percentile Bo  | otstrap UCL       | 15.28 |
| 74 |    |              |                | 95% BCA Bo      | ootstrap UCL   | 18.87          |                 |                 |               |                |                   |       |
| 75 |    |              | 90% Ch         | ebyshev(Me      | an, Sd) UCL    | 18.66          |                 |                 | 95% Ch        | ebyshev(Me     | an, Sd) UCL       | 22.89 |
| 76 |    |              | 97.5% Ch       | ebyshev(Me      | an, Sd) UCL    | 28.76          |                 |                 | 99% Ch        | ebyshev(Me     | an, Sd) UCL       | 40.29 |
| 77 |    |              |                |                 |                |                |                 |                 |               |                |                   |       |
| 78 |    |              |                |                 |                | Suggested      | UCL to Use      |                 |               |                |                   |       |
| 79 |    |              | 95% Che        | ebyshev (Me     | an, Sd) UCL    | 22.89          |                 |                 |               |                |                   |       |
| 80 |    |              |                |                 |                |                |                 |                 |               |                |                   |       |
| 81 | 1  | Note: Sugges | stions regard  | ling the selec  | ction of a 95% | UCL are pro    | ovided to hel   | p the user to   | select the m  | nost appropria | ate 95% UCL       |       |
| 82 |    |              | F              | Recommenda      | ations are bas | ed upon dat    | a size, data o  | distribution, a | and skewnes   | S.             |                   |       |
| 83 |    | These recor  | mmendations    | s are based u   | upon the resu  | Its of the sim | ulation studie  | es summariz     | ed in Singh,  | Maichle, and   | d Lee (2006).     |       |
| 84 | Но | wever, simu  | lations result | ts will not cov | /er all Real W | orld data se   | ts; for additio | nal insight th  | ne user may   | want to cons   | ult a statisticia | an.   |
| 85 |    |              |                |                 |                |                |                 |                 |               |                |                   |       |

|    | A         | В              | C            | D                  | E            | F              | G              | Н            |               | J               | K                | L     |
|----|-----------|----------------|--------------|--------------------|--------------|----------------|----------------|--------------|---------------|-----------------|------------------|-------|
| 1  |           |                |              | l                  | UCL Statis   | tics for Unc   | ensored Full   | Data Sets    |               |                 |                  |       |
| 2  |           |                |              | 1                  |              |                |                |              |               |                 |                  |       |
| 3  |           | User Sele      | cted Options | Kyeemagh Infa      | ants Schoo   | ol: Fill mater | al nickel 95%  | 6 UCL        |               |                 |                  |       |
| 4  | Da        | te/Time of Co  | omputation   | ProUCL 5.112       | /12/2018 3   | :01:43 PM      |                |              |               |                 |                  |       |
| 5  |           |                | From File    | 627289, 62841      | 16, ES1833   | 3866, ES183    | 34552          |              |               |                 |                  |       |
| 6  |           | Ful            | I Precision  | OFF                |              |                |                |              |               |                 |                  |       |
| 7  |           | Confidence     | Coefficient  | 95%                |              |                |                |              |               |                 |                  |       |
| 8  | Number of | of Bootstrap ( | Operations   | 2000               |              |                |                |              |               |                 |                  |       |
| 9  |           |                |              |                    |              |                |                |              |               |                 |                  |       |
| 10 |           |                |              |                    |              |                |                |              |               |                 |                  |       |
| 11 | C0        |                |              |                    |              |                |                |              |               |                 |                  |       |
| 12 |           |                |              |                    |              |                |                |              |               |                 |                  |       |
| 13 |           |                |              |                    |              | General        | Statistics     |              | <u> </u>      |                 |                  |       |
| 14 |           |                | lotal        | Number of Obs      | servations   | 30             |                |              | Numbe         | r of Distinct C | bservations      | 8     |
| 15 |           |                |              |                    |              |                |                |              | Number        | r of Missing C  | bservations      | 0     |
| 16 |           |                |              |                    | Minimum      | 2              |                |              |               |                 | Mean             | 11.29 |
| 17 |           |                |              |                    | iviaximum    | 130            |                |              |               | 0.4 -           |                  | 5     |
| 18 |           |                |              | 0 11               | SD           | 23.13          |                |              |               | Sta. E          | rror of Mean     | 4.222 |
| 19 |           |                |              | Coefficient of     | variation    | 2.049          |                |              |               |                 | Skewness         | 4.997 |
| 20 |           |                |              |                    |              | Normal         | COE Tost       |              |               |                 |                  |       |
| 21 |           |                |              | haniro Wilk Tos    | t Statistic  | 0.331          |                |              | Shaniro Wi    | IK GOE Test     |                  |       |
| 22 |           |                | 5% S         | hapiro Wilk Criti  | ical Value   | 0.001          |                | Data No      | t Normal at   | 5% Significan   |                  |       |
| 23 |           |                | 576 5        |                    | t Statistic  | 0.927          |                | Data No      |               |                 |                  |       |
| 24 |           |                | 5            | % Lilliefors Criti | ical Value   | 0.374          |                | Data No      | t Normal at ! | 5% Significan   | nce l evel       |       |
| 25 |           |                |              |                    | Data Not     | Normal at !    | 5% Significar  |              |               |                 |                  |       |
| 26 |           |                |              |                    | Data Mot     |                | , o olgrinioal |              |               |                 |                  |       |
| 27 |           |                |              |                    | As           | sumina Nor     | mal Distribut  | ion          |               |                 |                  |       |
| 20 |           |                | 95% No       | ormal UCL          |              | g              |                | 95%          | UCLs (Adiu    | sted for Ske    | wness)           |       |
| 29 |           |                |              | 95% Studer         | nt's-t UCL   | 18.46          |                |              | 95% Adjuste   | ed-CLT UCL (    | (Chen-1995)      | 22.35 |
| 30 |           |                |              |                    |              |                |                |              | 95% Modifie   | ed-t UCL (Jol   | ,<br>nnson-1978) | 19.1  |
| 32 |           |                |              |                    |              |                |                |              |               | ,               | ,                |       |
| 33 |           |                |              |                    |              | Gamma          | GOF Test       |              |               |                 |                  |       |
| 34 |           |                |              | A-D Tes            | st Statistic | 5.446          |                | Ander        | son-Darling   | Gamma GO        | F Test           |       |
| 35 |           |                |              | 5% A-D Criti       | ical Value   | 0.774          | Da             | ata Not Gam  | ma Distribut  | ed at 5% Sig    | nificance Lev    | el    |
| 36 |           |                |              | K-S Tes            | st Statistic | 0.421          |                | Kolmog       | orov-Smirno   | ov Gamma G      | OF Test          |       |
| 37 |           |                |              | 5% K-S Criti       | ical Value   | 0.165          | Da             | ata Not Gam  | ma Distribut  | ed at 5% Sig    | nificance Lev    | el    |
| 38 |           |                |              | Data               | Not Gamr     | na Distribut   | ed at 5% Sig   | nificance Le | vel           |                 |                  |       |
| 39 |           |                |              |                    |              |                |                |              |               |                 |                  |       |
| 40 |           |                |              |                    |              | Gamma          | Statistics     |              |               |                 |                  |       |
| 41 |           |                |              | k                  | hat (MLE)    | 1.063          |                |              | k :           | star (bias cor  | rected MLE)      | 0.979 |
| 42 |           |                |              | Theta              | hat (MLE)    | 10.62          |                |              | Theta         | star (bias cor  | rected MLE)      | 11.53 |
| 43 |           |                |              | nu                 | hat (MLE)    | 63.77          |                |              |               | nu star (bia    | is corrected)    | 58.72 |
| 44 |           |                | M            | LE Mean (bias o    | corrected)   | 11.29          |                |              |               | MLE Sd (bia     | s corrected)     | 11.41 |
| 45 |           |                |              |                    |              |                |                |              | Approximate   | e Chi Square    | Value (0.05)     | 42.11 |
| 46 |           |                | Adjus        | sted Level of Sig  | gnificance   | 0.041          |                |              | Ad            | djusted Chi S   | quare Value      | 41.29 |
| 47 |           |                |              |                    |              |                |                |              |               |                 |                  |       |
| 48 |           | -              |              | -                  | Ass          | suming Gan     | nma Distribut  | tion         |               |                 |                  |       |
| 49 | g         | 5% Approxir    | nate Gamma   | UCL (use whe       | n n>=50))    | 15.74          |                | 95% Ad       | justed Gamr   | na UCL (use     | when n<50)       | 16.05 |
| 50 |           |                |              |                    |              |                |                |              |               |                 |                  |       |

|    | А  | В           | С              | D               | E              | F               | G              | Н               |               | J              | K                | L     |
|----|----|-------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|---------------|----------------|------------------|-------|
| 51 |    |             |                |                 |                | Lognormal       | GOF Test       |                 |               |                |                  |       |
| 52 |    |             | S              | Shapiro Wilk 7  | Test Statistic | 0.688           |                | Shap            | piro Wilk Log | normal GOF     | Test             |       |
| 53 |    |             | 5% S           | hapiro Wilk C   | Critical Value | 0.927           |                | Data Not        | Lognormal a   | t 5% Significa | ance Level       |       |
| 54 |    |             |                | Lilliefors      | Fest Statistic | 0.401           |                | Lil             | liefors Logn  | ormal GOF T    | est              |       |
| 55 |    |             | 5              | 5% Lilliefors C | Critical Value | 0.159           |                | Data Not        | Lognormal a   | t 5% Significa | ance Level       |       |
| 56 |    |             |                |                 | Data Not L     | ognormal at     | 5% Significa   | ance Level      |               |                |                  |       |
| 57 |    |             |                |                 |                |                 |                |                 |               |                |                  |       |
| 58 |    |             |                |                 |                | Lognorma        | Statistics     |                 |               |                |                  |       |
| 59 |    |             |                | Minimum of I    | Logged Data    | 0.693           |                |                 |               | Mean of        | logged Data      | 1.884 |
| 60 |    |             | 1              | Maximum of l    | Logged Data    | 4.868           |                |                 |               | SD of          | logged Data      | 0.798 |
| 61 |    |             |                |                 |                |                 |                |                 |               |                |                  |       |
| 62 |    |             |                |                 | Assu           | uming Logno     | rmal Distribu  | ution           |               |                |                  |       |
| 63 |    |             |                |                 | 95% H-UCL      | 12.62           |                |                 | 90%           | Chebyshev (    | MVUE) UCL        | 13.24 |
| 64 |    |             | 95%            | Chebyshev (     | MVUE) UCL      | 15.19           |                |                 | 97.5%         | Chebyshev (    | MVUE) UCL        | 17.89 |
| 65 |    |             | 99%            | Chebyshev (     | MVUE) UCL      | 23.21           |                |                 |               |                |                  |       |
| 66 |    |             |                |                 |                |                 |                |                 |               |                |                  |       |
| 67 |    |             |                |                 | Nonparame      | etric Distribut | tion Free UC   | L Statistics    |               |                |                  |       |
| 68 |    |             |                | [               | Data do not f  | ollow a Disc    | ernible Distri | ibution (0.05   | 5)            |                |                  |       |
| 69 |    |             |                |                 |                |                 |                |                 |               |                |                  |       |
| 70 |    |             |                |                 | Nonpar         | rametric Dist   | ribution Free  | e UCLs          |               |                |                  |       |
| 71 |    |             |                | 95              | 5% CLT UCL     | 18.23           |                |                 |               | 95% Ja         | ckknife UCL      | 18.46 |
| 72 |    |             | 95%            | Standard Bo     | ootstrap UCL   | 18.16           |                |                 |               | 95% Boo        | otstrap-t UCL    | 45.5  |
| 73 |    |             | ç              | 95% Hall's Bo   | ootstrap UCL   | 42.57           |                |                 | 95% I         | Percentile Bo  | otstrap UCL      | 19.42 |
| 74 |    |             |                | 95% BCA Bo      | ootstrap UCL   | 24.23           |                |                 |               |                |                  |       |
| 75 |    |             | 90% Cł         | nebyshev(Me     | an, Sd) UCL    | 23.95           |                |                 | 95% Cł        | ebyshev(Me     | an, Sd) UCL      | 29.69 |
| 76 |    |             | 97.5% Cł       | nebyshev(Me     | an, Sd) UCL    | 37.66           |                |                 | 99% Cł        | ebyshev(Me     | an, Sd) UCL      | 53.3  |
| 77 |    |             |                |                 |                |                 |                |                 |               |                |                  |       |
| 78 |    |             |                |                 |                | Suggested       | UCL to Use     |                 |               |                |                  |       |
| 79 |    |             | 95% Ch         | ebyshev (Me     | an, Sd) UCL    | 29.69           |                |                 |               |                |                  |       |
| 80 |    |             |                |                 |                |                 |                |                 |               |                |                  |       |
| 81 | I  | Note: Sugge | stions regard  | ding the selec  | tion of a 95%  | UCL are pro     | ovided to help | p the user to   | select the m  | nost appropria | ate 95% UCL      |       |
| 82 |    |             | F              | Recommenda      | ations are bas | sed upon dat    | a size, data c | distribution, a | and skewnes   | SS.            |                  |       |
| 83 |    | These reco  | mmendation     | s are based ι   | pon the resu   | Its of the sim  | ulation studie | es summariz     | zed in Singh, | Maichle, and   | d Lee (2006).    |       |
| 84 | Но | wever, simu | lations result | ts will not cov | er all Real W  | orld data set   | s; for additio | nal insight th  | ne user may   | want to cons   | ult a statistici | an.   |
|    |    |             |                |                 |                |                 |                |                 |               |                |                  |       |

### APPENDIX



### BOREHOLE LOGS



|                 |  | Ca  | arc  | no   |  |   |                      |  |               |   |   | BORE   | EHOLE LOG SHEET  |
|-----------------|--|---|--|--|--|---|----------------------|--|---------------|---|---|--|--|
| Cli<br>Pr<br>Lo | ient:<br>oject:<br>catio   | ן<br>ו<br>ח: ו  | OWP<br>Detai<br>(yee   | Australia<br>led Site Ir<br>magh Infa  | nvestigation an<br>ants School, Ky   | d Geot  | techi<br>ih, N       | nical Ir<br>ISW  | ives          | tigation<br>Job No: 5017190157  |   | ŀ  | Iole No: BH01  |
| Po              | sitior   | n: E33  | ,<br>0215  | 5.509 N624   | 41986.553 56 N   | IGA94   |                      |  |               | Angle from Horizontal: 90   | D°  | Surfac   | e Elevation: 3.480 m AHD   |
| Ri              | <u>д</u> Тур   | e: Ut   | e Mo   | unted Dri  | ll Rig   |   |                      |  |               | Mounting: Light Vehicle   |   | Driller:                                       | : TR   |
| Ca              | ising  | Diame   | eter:  | 4/40   | Data Com   | alatadı   | 10/                  | 44/40  |               |   |   | Contra   | od Bur UP  |
|                 | Drillin  | arteu.  | 10/1   | I/ IO<br>Sampl   | ling & Testing   | Jieled.   | 10/                  | 11/10  |               | LOggeu by. DD<br>Material   | Description   | Check  | ей бу. ЈБ  |
|                 |  | 9   |  | Gampi  |  | â   | Ê                    |  | _             |   |   |  |  |
| Method          | Resistance   | Casing  | Water  | Si   | ample or<br>ield Test  | RL (m AH  | Depth (n             | Graphic<br>Log   | Classificatio | SOIL TYPE, plasticity or particle chara<br>colour, secondary and minor comp<br>ROCK TYPE, grain size and type,<br>fabric & texture, strength, weather<br>defects and structure  | acteristic,<br>ponents<br>colour,<br>ering,<br>E  | Consistency<br>Relative<br>Density             | STRUCTURE<br>& Other Observations  |
| AD/T            |  |   |  | SPT 1.00<br>4, 4, 6 N=10   | 1.45 m   | 3   | - 1                  |  |               | 0.10m Silty SAND: fine grained, grey, w<br>0.30m Organics<br>FILL: Gravelly SAND: fine grained<br>\fine to medium grained gravel<br>Silty SAND: fine grained, grey ye   | itth<br>d. grey, //<br>llow /   |  | TOPSOIL  |
|                 |  |   | 1/181  | SPT 2.50 - 2<br>5, 9, 15 N=2   | 2.95 m<br>24   |   | - 2                  |  | ·             | 2.20mSilty SAND: fine to medium grain yellow  | ned, white M  | <br>-  |  |
| 6               | F-H  |   | 10/11  | ES 4.00 - 4.<br>BH01 4.00 - 4<br>SPT 4.00 - 4<br>8, 16, 26 N=                        | 45 m<br>4.45 ASS<br>4.45 m<br>4.42 /   |   | - 4                  |  | SP            |   |   | MD to D  |  |
|                 |  |   |  | 5.50 - 5.95<br>BH01 5.50 - 5<br>SPT 5.50 - 5<br>17, 19, 19 N                         | m<br>5.95 ASS<br>5.95 m<br>I=38 ////////////////////////////////////   | -2  | - 6<br>- 7           |  | SP            | 5.50m<br>SAND: fine to medium grained, p<br>trace fine grained rounded grave  | pale grey,  |  |  |
| 5               |  |   |  | 5, 5, 3 N=8  | / .45 m  | -4  | - 8                  |  | CI            | Sitty CLAY: medium plasticity, bit<br>fine grained gravel, trace of shell   | <br>ack, trace<br>Is  | F to St  | 7.40 m: HP = 100 Kpa<br>-<br>-<br>-  |
|                 |  |   |  | 8.50 - 8.95<br>BH01 8.50-8<br>SPT 8.50 - 8<br>(0, 0, 0 N=0                           | m<br>8.95 ASS<br>8.95 m<br>/   |   | - 9                  |  | CL-<br>CI     | Sandy CLAY: low to medium plat<br>black, fine grained sand, with she<br>fragments   | sticity,  | VS to S  |  |
|                 | I<br>INT PS<br>IA H<br>IA H<br>IA H<br>IA H<br>IA H<br>IA PS<br>IA A<br>IS PS<br>IA A<br>IS S<br>IFA H<br>VB V<br>R R<br>VB V<br>R R<br>VB V<br>IFA H<br>VB V<br>R R<br>IFA H<br>VB V<br>IFA H<br>IFA | Accavato<br>ipper<br>and augush tub-<br>ush tub-<br>onic dril<br>ir hamm<br>ercussic<br>hort spir<br>olid fligh<br>olid fligh | r bucke<br>er<br>ing<br>er<br>on sam<br>al auge<br>t auge<br>ght auge<br>ght auge<br>e drillin<br>er | I<br>pler<br>er<br>r: V-Bit<br>r: TC-Bit<br>ger<br>g<br>or details of<br>escriptions | PENETRATION<br>VE Very Easy<br>F Firm<br>H Hard<br>VH Very Hard (Re<br>WATER<br>Water Le<br>shown<br>water inf<br>Water ou | D Resistance<br>of Resistance<br>of Usal)<br>evel on Da<br>low<br>tflow | <sup>e)</sup><br>ate | FIE<br>SP<br>HP<br>DC<br>PSI<br>MC<br>PB<br>IMP<br>PID<br>VS |               | Inusum     Standard Penetration Test     Standard Penetration Test       Hand/Pocket Penetrometer     E       Dynamic Cone Penetrometer     E       Perth Sand Penetrometer     Image: Content       Plate Bearing Test     Borehole Impression Test       Photoionisation Detector     Vane Shear; P=Peak,       R=Resdual (uncorrected kPa)     V | SAMPLES SAMPL | J<br>bed sample<br>ntal sample<br>ube 'undistu | Image: Solid Consistency       e     VS     - Very Soft       a     F     - Soft       e     F     - Firm       urbed'     St     - Stiff       VSt     - Very Stiff       H     - Hard <b>RELATIVE DENSITY</b> VL     - Very Loose       L     - Loose       D     - Medium Dense       D     - Dense       VD     - Very Dense |

|               |   | )   | Cá  | ara   | no   |   |  |                        |                                   |   |  |   | B   | ORE   | HOL      | E LOG  | SHEET  |
|---------------|---|---|---|---|--|---|--|------------------------|-----------------------------------|---|--|---|---|---|----------|--|--|
|               | Clie<br>Proj<br>Loca                                      | nt:<br>ect:<br>ation  | C<br>C<br>: M   | WP<br>Detail<br>(yeer   | Australia<br>ed Site Ir<br>nagh Infa                     | ivestigation an<br>ints School, Ky  | d Geo<br>veema                                     | otech<br>gh, N         | nical Ir<br>ISW                   | ives  | tigation<br>Job No: 5017190157   |   |   | Η   | lole     | No:  | BH01   |
| F             | Pos   | ition   | E33   | 0215  | .509 N624  | 1986.553 56 N   | IGA94  | ŀ                      |                                   |   | Angle from Horizontal:   | 90°   | S   | Surface                                     | e Elevat | ion: 3.48  | 80 m AHD   |
| F             | Rig   | Туре  | : Ute   |   | unted Dril   | l Rig   |  |                        |                                   |   | Mounting: Light Vehic  | le  |   | Driller:                                    | TR       |  |  |
| H             | Jas<br>Data   | ing L<br>Stai   | name  | ter:  | 1/18   | Date Com  | oleted   | · 10/                  | 11/18                             |   | Logged By: DD  |   |   | Checke                                      | d By:    | IR   |  |
| F             | [   | Drilling  |   | 10/1  | Sampl  | ing & Testing   |  |                        |                                   |   | Mate   | erial Description   | <u> </u>  | meene                                       | aby. c   |  |  |
| ┢             |   |   |   |   |  |   | ₽  | ۲<br>آ                 |                                   | c   |  |   |   |   |          |  |  |
|               | Method  | Resistance  | Casing  | Water   | Sa<br>Fi   | ample or<br>ield Test   | RL (m AF   | Depth (r               | Graphic<br>Log                    | Classificatio                                 | SOIL TYPE, plasticity or particle of<br>colour, secondary and minor c<br>ROCK TYPE, grain size and ty<br>fabric & texture, strength, we<br>defects and structure   | characteristic,<br>components<br>/pe, colour,<br>eathering,<br>e  | Moisture<br>Condition   | Consistency<br>Relative<br>Density          | 8        | STRUCT<br>& Other Obse   | URE<br>ervations   |
|               |   |   |   |   | 10.00 - 10.4<br>BH01 10.00<br>SPT 10.00 -<br>1, 0, 1 N=1 | <sup>I</sup> 5 m<br>-10.45 ASS<br>10.45 m   | -<br>-7  | -                      |                                   |   | Clayey CLAY: fine to mediur<br>plasticity clay   | n, black, low   |   |   | MARINE   |  | -  |
|               |   |   |   |   |  |   | -  | -<br>11<br>-           |                                   | CL-<br>CI                                     |  |   |   | VL  |          |  | -  |
|               |   |   |   |   | SPT 11.50 -<br>4, 5, 7 N=12                              | 11.95 m   | -8   | -<br>-<br>             |                                   |   | SAND: medium grained, yell   | low grey  |   |   |          |  | -  |
|               |   |   |   |   |  |   | -<br>-9-   | -                      |                                   | SP  |  |   |   | MD  |          |  | -  |
|               | – WB –  | F-H   |   |   | SPT 13.00 -<br>4, 7, 14 N=2                              | 13.45 m<br>1  | -  | -<br>13<br>            | //                                |   | 13.00m<br>Clayey SAND: fine grained, y<br>plasticity clay  | grey, low   | w   |   |          |  | -  |
|               |   |   |   |   |  |   | -10-   | -<br>-<br>14           |                                   | SP  |  |   |   |   |          |  | -  |
|               |   |   |   |   | SPT 14.50 -<br>26, 30 N=R                                | 14.80 m   | -<br>-11 –   | -                      |                                   |   | 14.60m<br>SAND: fine to medium grain<br>vellow   | ed, grey  |   | D to VD                                     | WEATHE   | RED ROCK   | -<br>-<br>   |
|               |   |   |   |   |  |   | -<br>-<br>12 –                                     | — 15<br>-<br>-         |                                   | SP  |  |   |   |   |          |  | -  |
|               |   |   |   |   | SPT 16.00 -<br>0, 8, 30 N=3                              | 16.45 m<br>8  | -  | -<br>-<br>16<br>-      |                                   |   |  |   |   |   |          |  | -  |
|               | *   |   |   |   |  |   | -13=   | -                      | 543.944<br>                       |   | 16.45m<br>TERMINATED AT 16.45 m  |   |   |   |          |  | -  |
| 0 0 1 1 1 0 1 |   |   |   |   |  |   | -  | -<br>17<br>-           |                                   |   | raiget deptit  |   |   |   |          |  | -  |
|               |   |   |   |   |  |   | -14 —<br>-<br>-                                    | -<br>-<br>- 18         |                                   |   |  |   |   |   |          |  | -  |
| 10000         |   |   |   |   |  |   | -<br>-15 —   | -                      |                                   |   |  |   |   |   |          |  | -  |
|               |   |   |   |   |  |   | -  | -<br>19<br>-<br>-      |                                   |   |  |   |   |   |          |  | -  |
|               | M   | TUOP  |   |   | T  | DENETRATION   | -16 —<br>-<br>-                                    | -                      |                                   |   |  | SAMDI FO  |   |   |          | 5011 001   |  |
|               | EX<br>R<br>HA<br>PT<br>SOI<br>AD<br>AD<br>AD<br>HF/<br>WP | Ex<br>Rip<br>Pu<br>N So<br>Air<br>Pe<br>Sh<br>V So<br>T So<br>A Ho<br>W | cavator<br>oper<br>nd aug<br>sh tube<br>nic drilli<br>hamme<br>rcussio<br>ort spin<br>lid flight<br>lid flight<br>llow flig<br>ssboor | bucke<br>er<br>ng<br>er<br>n samp<br>al auger<br>auger<br>t auger<br>ht aug | oler<br>er<br>:: V-Bit<br>:: TC-Bit<br>er<br>a           | VE Very Easy (No<br>E Easy<br>F Firm<br>H Hard<br>VH Very Hard (Re<br>WATER<br>Water L6<br>shown<br>water onf<br>water of | e Resistan<br>efusal)<br>evel on [<br>low<br>tflow | <sup>ce)</sup><br>Date | PSI<br>MC<br>PB<br>MC<br>PB<br>VS | T -<br>P -<br>P -<br>T -<br>T -<br>P -<br>T - | Standard Penetration Test<br>Hand/Pocket Penetrometer<br>Dynamic Cone Penetrometer<br>Perth Sand Penetrometer<br>Moisture Content<br>Plate Bearing Test<br>Borehole Impression Test<br>Photoionisation Detector<br>Vane Shear; P=Peak,<br>B=Past/ul (uncorrected (PD)) | B - Bulk di<br>D - Disturt<br>ES - Enviro<br>U - Thin w<br>MOISTURE<br>D - Dry<br>M - Moist<br>W - Wet<br>PL - Plastic<br>LL - Liquid | isturbed<br>bed sar<br>nmenta<br>all tube<br>c limit<br>limit | d sample<br>nple<br>al sample<br>a'undistur | rbed'    | Sole COI           VS         -           S         -           F         -           St         -           VSt         -           H         -           H         -           VSt         -           L         -           D         - | Very Soft<br>Soft<br>Firm<br>Suff<br>Very Stiff<br>Hard<br>E DENSITY<br>Very Loose<br>Loose<br>Medium Dense<br>Dense |
|               | RR<br>Refe  | Ro<br>er to exp<br>reviation  | ck rolle  | notes fo  | or details of escriptions                                |   | (  | CAF                    |                                   | 0 (   | (NSW/ACT) PTY I  | w - Moistu  | ire cont  | tent  |          | VD - V   | Very Dense   |

|           |                     | )                      | Cá                              | arc                        | Ino                                   |                            |                 |               |                 |                |  | В  | ORE                                | HOLE LOG SHEET                    |
|-----------|---------------------|------------------------|---------------------------------|----------------------------|---------------------------------------|----------------------------|-----------------|---------------|-----------------|----------------|--|--|------------------------------------|-----------------------------------|
|           | Clie<br>Proj<br>Loc | nt:<br>ject:<br>ation  | C<br>C<br>: P                   | )WP<br>Detai<br>(vee       | Australia<br>led Site Ir<br>magh Infa | vestigation an             | d Geo<br>/eemad | tech<br>ah. N | nical Ir<br>ISW | nves           | tigation   |  | Η                                  | lole No: BH02                     |
| Ī         | Pos                 | ition                  | E33                             | ,<br>0177                  | .733 N624                             | 12026.438 56 N             | NGA94           |               |                 |                | Angle from Horizontal: 90°   | :  | Surface                            | Elevation: 4.600 m AHD            |
|           | Rig                 | Туре                   | : Ute                           | e Mo                       | unted Dri                             | ll Rig                     |                 |               |                 |                | Mounting: Light Vehicle  |  | Driller:                           | TR                                |
| 4         | Cas                 | ing C                  | )iame                           | eter:                      | 4/40                                  | Data Carr                  |                 | 47            | 44/40           |                | Langed Day, DD   |  | Contrac                            | ctor: Stratacore                  |
| ľ         | Data                |                        | rtea:                           | 17/1                       | 1/18<br>Sama                          | Date Com                   | pietea:         | 1//           | 11/18           |                | Logged By: DD  |  | Спеске                             | аву: Јв                           |
| $\vdash$  |                     |                        | 1                               |                            | Sampi                                 |                            | â               | Ē             |                 | 6              |  |  |                                    |                                   |
|           | Method              | Resistance             | Casing                          | Water                      | Si<br>F                               | ample or<br>ield Test      | RL (m AH        | Depth (n      | Graphic<br>Log  | Classification | SOIL TYPE, plasticity or particle charact<br>colour, secondary and minor compon<br>ROCK TYPE, grain size and type, col<br>fabric & texture, strength, weatherin<br>defects and structure | eristic,<br>ents<br>lour,<br>ig,<br>WO<br>Soutition                          | Consistency<br>Relative<br>Density | STRUCTURE<br>& Other Observations |
|           |                     |                        |                                 |                            |                                       |                            | 4-              | - 1           |                 |                | D.10m Sitty SAND: fine to medium grained<br>brown, with organics   | , black / M<br><br>grey<br>el  |                                    |                                   |
|           |                     |                        |                                 |                            | SPT 1.00 - 1<br>3, 4, 5 N=9           | 1.45 m                     |                 |               |                 |                | Silty SAND: fine grained, pale brow  | n  |                                    | MARINE -                          |
|           | 9<br>               |                        |                                 |                            | D 1.50 - 2.0                          | 0 m                        | 3-              |               |                 |                |  |  |                                    | -                                 |
|           |                     |                        |                                 |                            |                                       |                            |                 | -2            |                 |                |  | D to M   |                                    | -                                 |
|           |                     |                        |                                 |                            | SPT 2.50 - 2<br>2, 3, 2 N=5           | 2.95 m                     | 2-              |               |                 | SP             |  |  | L to MD                            |                                   |
| -         | X                   |                        |                                 |                            |                                       |                            |                 | -3            |                 |                |  |  |                                    | -                                 |
|           |                     |                        |                                 |                            |                                       |                            | 1-              |               |                 |                |  |  |                                    | -                                 |
| S         |                     |                        |                                 | _ <u>\</u>                 | SPT 4.00 - 4<br>2, 4, 8 N=12          | 4.45 m<br>2                |                 | -4            |                 |                | 4.15m  |  |                                    | -                                 |
|           |                     |                        |                                 | 07/11/1                    |                                       |                            | 0-              |               |                 |                | white  |  |                                    | -                                 |
|           |                     | E                      |                                 |                            |                                       |                            |                 | -5            |                 |                |  |  |                                    | -                                 |
|           |                     |                        |                                 |                            |                                       | 5 05 m                     | +               |               |                 |                |  |  |                                    | -                                 |
| naidel AC |                     |                        |                                 |                            | 10, 18, 30 N                          | I=48                       | -1-+            | -6            |                 |                | trace of shell fragments   |  |                                    | -                                 |
| t-00.00.0 |                     |                        |                                 |                            |                                       |                            |                 | Ū             |                 | SP             |  |  | D                                  |                                   |
|           | N                   |                        |                                 |                            |                                       |                            | -2-             |               |                 |                |  |  |                                    | -                                 |
| 7110177 ~ |                     |                        |                                 |                            | SPT 7.00 - 7<br>21, 4, 4 N=8          | 7.45 m<br>3                |                 | -7            |                 |                | potential ass odour  | w  |                                    | -                                 |
| awiigriic |                     |                        |                                 |                            |                                       |                            | -3-             |               |                 |                |  |  |                                    |                                   |
|           |                     |                        |                                 |                            |                                       |                            |                 | -8            |                 |                |  |  |                                    | -                                 |
|           |                     |                        |                                 |                            | SPT 8.50 - {<br>0, 0, 0 N=0           | 3.95 m                     | -4-             |               |                 |                | 8.50m<br>Sandy CLAY: low plasticity, black br<br>fine grained sand   |  |                                    | -                                 |
|           |                     |                        |                                 |                            |                                       |                            |                 | -9            |                 |                |  |  | VCtoC                              | -                                 |
|           |                     |                        |                                 |                            |                                       |                            | -5-             |               |                 | UL             |  |  | V3 10 3                            | -                                 |
|           |                     |                        |                                 |                            | <u> </u>                              |                            |                 |               | <u> ////</u>    |                |  |  |                                    |                                   |
|           | EX                  | Ex                     | cavato                          | bucke                      | ət                                    | VE Very Easy (N            | o Resistanc     | e)            | SP"             | נט דו<br>ד-    | Standard Penetration Test B  | - Bulk disturbe  | d sample                           | VS - Very Soft                    |
|           | к<br>НА<br>РТ       | Ha                     | nd aug<br>sh tube               | er                         |                                       | E Easy<br>F Firm<br>H Hard |                 |               | HP<br>DC        | -<br>P-        | Hand/Pocket Penetrometer Dynamic Cone Penetrometer ES  | <ul> <li>Disturbed sa</li> <li>Environment</li> <li>Thin wall tub</li> </ul> | nipie<br>al sample<br>e 'undistui  | rbed' St - Stiff                  |
| YAN YAN   | SO<br>AH            | N So<br>Air            | nic drill<br>hamm               | ing<br>er                  |                                       | VH Very Hard (Re           | efusal)         |               | PSI<br>MC       | P -            | Perth Sand Penetrometer Moisture Content MO  | ISTURE   |                                    | VSt - Very Stiff<br>H - Hard      |
| 2<br>P    | PS<br>AS            | Pe<br>Sh               | rcussic<br>ort spir             | n sam<br>al aug            | pler<br>er                            | WATER                      | evel on D       | ate           | PB<br>IMF       | T -            | Plate Bearing Test D<br>Borehole Impression Test   | - Dry<br>- Moist   |                                    |                                   |
| 19.01     | AD.                 | /V So<br>/T So         | lid fligh<br>lid fligh          | t auge<br>t auge           | r: V-Bit<br>r: TC-Bit                 | shown                      | low             |               | PID             | ) -            | Photoionisation Detector W<br>Vane Shear: B=Deck PL  | <ul> <li>Wet</li> <li>Plastic limit</li> </ul>                               |                                    | VL - Very Loose<br>L - Loose      |
| 4.10.2    | WE<br>RR            | HO<br>Wa<br>Ro         | now file<br>ashbore<br>ck rolle | pn: aug<br>e drillin<br>er | g                                     |                            | tflow           |               | 0               | -              | R=Resdual (uncorrected kPa)  | <ul> <li>Liquid limit</li> <li>Moisture cor</li> </ul>                       | tent                               | D - Dense<br>VD - Very Dense      |
|           | Refe<br>abb         | er to exp<br>reviation | lanatory<br>s and ba            | notes fo                   | or details of<br>escriptions          |                            | (               | CAF           |                 | 0 (            | NSW/ACT) PTY LTD   | )  |                                    |                                   |

|                                       |   | $\supset$  | Cá   | arc  | lno  |   |   |  |  |                 |   |  | B  | ORE                                       | HOLE LOG SHEET   |
|---------------------------------------|---|--|--|--|--|---|---|--|--|-----------------|---|--|--|---|--|
|                                       | Clie<br>Pro   | ent:<br>ject:<br>ation   | C<br>C<br>I: M   | )WP<br>)etai<br>(yee   | Australia<br>led Site Ir<br>magh Infa                      | nvestigation an<br>Ints School, Ky  | d Geo<br>/eema                                      | techı<br>gh, N   | nical Ir<br>SW   | ives            | tigation<br>Job No: 5017190157  |  |  | Η   | lole No: BH02<br>Sheet: 2 of 2   |
|                                       | Pos   | ition  | : E33  | 0177   | .733 N624  | 12026.438 56 N  | IGA94   |  |  |                 | Angle from Horizontal:  | : 90°  | S  | Surface                                   | Elevation: 4.600 m AHD   |
|                                       | Rig   | Туре   | : Ute  | e Mo   | unted Dri  | II Rig  |   |  |  |                 | Mounting: Light Vehic   | le   | 0  | Oriller:                                  | TR   |
| Ľ                                     | Cas   | ing E  | Diame  | ter:   | 4/40   | <b>.</b>  |   |  |  |                 |   |  | 0  | Contrac                                   | ctor: Stratacore   |
| H                                     | Dat   | a Sta  | rted:  | 17/1   | 1/18   | Date Com  | pleted  | : 17/  | 11/18  |                 | Logged By: DD   |  | (  | hecke                                     | ed By: JB  |
| ┝                                     |   | Drilling   | 3  |  | Sampl  | ing & Testing   | <u></u>   | ~  |  |                 | Mat   | erial Description  | n<br>  |   |  |
|                                       | Method  | Resistance   | Casing   | Water  | Si<br>Fi   | ample or<br>ield Test   | RL (m AHI   | Depth (m   | Graphic<br>Log   | Classification  | SOIL TYPE, plasticity or particle of<br>colour, secondary and minor c<br>ROCK TYPE, grain size and ty<br>fabric & texture, strength, we<br>defects and structure  | characteristic,<br>components<br>ype, colour,<br>eathering,<br>re  | Moisture<br>Condition  | Consistency<br>Relative<br>Density        | STRUCTURE<br>& Other Observations  |
| Γ                                     |   |  |  |  | SPT 10.00 -<br>0, 0, 0 N=0                                 | 10.45 m   | -   |  | ////   |                 | Sandy CLAY: low plasticity,<br>fine grained sand (continued   | black brown,   |  |   | MARINE   |
|                                       |   |  |  |  | SPT 11.50 -<br>20, 2, 4 N=6                                | 11.95 m   | -6  | -<br>-<br>- 11<br>-<br>-<br>-<br>-<br>- 12               |  | CL              |   |  |  | VS to S                                   | -  |
|                                       |   |  |  |  | SPT 13.00 -<br>2, 5, 8 N=13                                | 13.45 m   | -8  | -<br>-<br>- 13<br>-<br>-                                 |  | CL-<br>CI       | 13.00m<br>Sandy CLAY: low to medium<br>grey, fine grained sand  | n plasticity,  |  |   |  |
|                                       | ×   | E  |  |  | SPT 14.50 -<br>(24, 30/30mr                                | 14.68 m<br>n N=R  | -10   | - 14<br>-<br>-<br>-<br>-<br>- 15<br>-<br>-               |  | SP              | 14.50m<br>SAND: medium grained, gre   |  |  | D to VD                                   |  |
| 100000 10010 1010 1010 1010 1000 1000 |   |  |  |  | SPT 16.00 -<br>7, 5, 5 N=10<br>SPT 17.50 -<br>16, 19, 17 N | 16.45 m<br>)<br>17.95 m<br>=36  | -12   | -<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>- |  | CI-<br>CH<br>SP | 16.00m<br>Sandy CLAY: medium to hig<br>fine grained sand<br>17.50m<br>Clayey SAND: fine to mediu<br>grey, low plasticity clay   | n plasticity,  |  | H<br>D to VD                              | -  |
|                                       | •   |  |  |  |  |   | -14   |  | <u> </u>   |                 | 17.95m<br>TERMINATED AT 17.95 m<br>Target depth   |  |  |   | -  |
|                                       | ME<br>EX<br>R<br>PTC<br>AH<br>PSC<br>AD<br>AD<br>HF<br>WI<br>RF | THOD<br>Ex<br>Rip<br>Ha<br>Pu<br>N Soo<br>Pe<br>Sh<br>/V Soo<br>/T Soo<br>A Ho<br>3 Wa<br>c Ro | cavator<br>oper<br>ind aug<br>sh tube<br>nic drilli<br>hamme<br>rcussio<br>ort spir<br>ild flight<br>ild | bucke<br>er<br>ing<br>er<br>n sam<br>al auge<br>t auge<br>t auge<br>ht auge<br>ht auge<br>r<br>notes for<br>sis of d | pler<br>er<br>r: V-Bit<br>r: TC-Bit<br>ler<br>g            | PENETRATION<br>VE Very Easy (Ni<br>E Easy<br>F Fim<br>H Hard<br>VH Very Hard (Re<br>WATER<br>WATER<br>WATER<br>Water Lu<br>Shown<br>water out | p Resistand<br>ofusal)<br>evel on E<br>low<br>tflow | <sup>ce)</sup><br>Date                                   | FIE<br>SP<br>HP<br>DC<br>PSF<br>MC<br>PB<br>IMF<br>PID<br>VS |                 | Standard Penetration Test<br>Hand/Pocket Penetrometer<br>Dynamic Cone Penetrometer<br>Perth Sand Penetrometer<br>Moisture Content<br>Plate Bearing Test<br>Borehole Impression Test<br>Photoionisation Detector<br>Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa) | SAMPLES<br>B - Bulk (<br>D - Distu<br>ES - Envir<br>U - Thin (<br>MOISTURE<br>D - Dry<br>M - Moist<br>W - Wet<br>PL - Plasti<br>LL - Liquic<br>w - Moist | disturbee<br>rbed sar<br>onmenta<br>wall tube<br>ic limit<br>d limit<br>ure cont | d sample<br>nple<br>I sample<br>'undistur | SOIL CONSISTENCY         VS       Very Soft         S       Soft         F       Firm         tbed'       St         St       Stiff         VSt       Very Stiff         H       Hard         RELATIVE DENSITY         VL       Very Loose         L       Loose         MD       Medium Dense         D       Dense         VD       Very Dense |

|                            | -  | )  | Ca  | arc  | Ino                                      |  |   |                    |   |   |  | E   | BORE  | HOLE LOG SHEET   |
|----------------------------|--|--|---|--|--|--|---|--------------------|---|---|--|---|---|--|
| CI<br>Pi                   | lien   | nt:<br>ect:  |   | OWP<br>Detai   | Australia<br>led Site Ir                 | vestigation an   | d Geo   | tech               | nical Ir  | nves  | tigation   |   | ŀ   | lole No: BH03  |
|                            | osif   | tion   | E33   | 0229   | .353 N624                                | 1972.538 56 N  | IGA94   | yn, n              | 511   |   | Angle from Horizontal: 90°   |   | Surfac  | e Elevation: 3.830 m AHD   |
| Ri                         | ig T   | Гуре   | : Ute   | e Mo   | unted Dri                                | II Rig   |   |                    |   |   | Mounting: Light Vehicle  |   | Driller:  | TR   |
| С                          | asiı   | ng D   | Diame   | eter:  |  |  |   |                    |   |   |  |   | Contra  | ctor: Stratacore   |
| Da                         | ata  | Sta  | rted:   | 17/1   | 1/18                                     | Date Com   | oleted  | : 17/              | 11/18   |   | Logged By: DD  |   | Check   | ed By: JB  |
|                            | D  | rilling  | 9   |  | Sampl                                    | ing & Testing  | ~   |                    |   |   | Material Des   | cription  |   |  |
| Method                     |  | Resistance   | Casing  | Water  | S<br>F                                   | ample or<br>ield Test  | RL (m AHD   | Depth (m)          | Graphic<br>Log  | Classification  | SOIL TYPE, plasticity or particle characteris<br>colour, secondary and minor component<br>ROCK TYPE, grain size and type, colour<br>fabric & texture, strength, weathering,<br>defects and structure   | , Sondition   | Consistency<br>Relative<br>Density              | STRUCTURE<br>& Other Observations  |
|                            | •  |  |   |  | D 0.20 - 0.5                             | 0 m  |   |                    |   |   | SAND: fine to medium grained, dark<br>brown, with organics   |   |   | TOPSOIL<br>MARINE  |
|                            | _  |  |   |  | SPT 1.00 - <sup>-</sup><br>1, 3, 3 N=6   | 1.45 m   | 3   | 1                  |   | · · · · · · · · · · · · · · · · · · ·                 |  |   |   |  |
| AD/                        | Ì  |  |   |  | B 2.00 - 2.5                             | 0 m  | 2   | -<br>-<br>-2       |   |   | SAND: fine to medium grained, yellow brown   | D to M  |   | -<br>-<br>-  |
|                            |  |  |   |  | SPT 2.50 - 2<br>2, 7, 10 N=1             | 2.95 m<br>17   | -<br>-<br>-<br>1-                                   |                    |   | SP  |  |   | MD  |  |
|                            | <u>/</u>   |  |   |  |  |  | -<br>-<br>-<br>-<br>-<br>0-                         | -3                 |   |   |  |   |   |  |
|                            |  |  |   | 07/11/18   | SPT 4.00 - 4<br>6, 20, 22 N=             | 4.45 m<br>-42  | ء<br>-<br>-<br>1-1-                                 | - 4<br>-<br>-      |   |   | 4.00m<br>SAND: fine to medium grained, white<br>yellow   |   |   | -  |
|                            |  | E-F  |   |  | SPT 5.50 - {<br>3, 12, 27 N=             | 5.95 m<br>:39  | -<br>-<br>-2-                                       | -5                 |   |   | medium grained sand  |   |   |  |
| 100 12/20 10 17:00 0:00:00 |  |  |   |  | SPT 7.00 - 7<br>7, 7, 6 N=13             | 7.45 m   |   | -7                 |   | SP  |  | w   | MD to D   |  |
| ישוואמוחרר בו              |  |  |   |  |  |  | -4-   | - 8                |   |   | turning grey in colour   |   |   |  |
|                            |  |  |   |  | SPT 8.50 - 8<br>0, 0, 1 N=1              | 3.95 m   | -5  | -<br>-<br>- 9<br>- |   | CL  | Sandy CLAY: low plasticity, grey, fine to<br>medium grained sand   | )   | VS  |  |
|                            |  |  |   |  |  |  | <br><br>-6-   |                    |   |   |  |   |   |  |
|                            | MET<br>EX<br>R<br>HA<br>PT<br>SON<br>AD<br>AD<br>AD/T<br>HFA<br>WB<br>RR | HOD<br>Ex<br>Rij<br>Ha<br>Pu<br>Ain<br>Po<br>Sh<br>Sh<br>Sc<br>Sc<br>Ho<br>W<br>Rr | cavato<br>oper<br>nd aug<br>sh tube<br>nic drill<br>hamm<br>rcussic<br>ort spir<br>lid fligh<br>lid fligh<br>llow flig<br>ashbore<br>ck rolle | r bucke<br>er<br>ing<br>er<br>in sam<br>al auge<br>t auge<br>t auge<br>drillin<br>er | pler<br>er<br>r: V-Bit<br>r: TC-Bit<br>g | PENETRATION<br>VE Very Easy (No<br>E Easy<br>H Hard<br>VH Very Hard (Re<br>WATER<br>WATER<br>Water Lt<br>shown<br>Water inf<br>Water out | o Resistano<br>efusal)<br>evel on E<br>low<br>tflow | ce)<br>Date        | FIE<br>SP<br>HP<br>DCI<br>PSI<br>MC<br>PB<br>IMF<br>PID<br>VS | ELD TE<br>T -<br>P -<br>P -<br>T -<br>T -<br>D -<br>- | STS     SAMPI       Standard Penetration Test     B       Hand/Pocket Penetrometer     D       Dynamic Cone Penetrometer     U       Perth Sand Penetrometer     WOIST       Moisture Content     MOIST       Plate Bearing Test     D       Borehole Impression Test     M       Photoinisation Detector     W       Vane Shear; P=Peak,     PL       R=Resdual (uncorrected kPa)     W | LES<br>Bulk disturb<br>Disturbed sa<br>Environmen<br>Thin wall tub<br>URE<br>Dry<br>Moist<br>Wet<br>Plastic limit<br>Liquid limit<br>Moisture con | ed sample<br>ample<br>tal sample<br>be 'undistu | SOIL CONSISTENCY<br>VS - Very Soft<br>S - Soft<br>F - Firm<br>VSt - Stiff<br>VSt - Very Stiff<br>H - Hard<br>RELATIVE DENSITY<br>VL - Very Loose<br>L - Loose<br>MD - Medium Dense<br>D - Dense<br>VD - Very Dense |
|                            | Refer  | to exp   | lanatory<br>s and ba  | notes fo   | or details of<br>escriptions             |  | (   | CAF                |   | 0 (   | NSW/ACT) PTY LTD   |   |   |  |

|                | -   | )   | Ga  | arc  | Ino                                       |   |                                     |                        |   |                |   |   | B   | ORE  | HOLE LO  | G SHEET   |
|----------------|---|---|---|--|---|---|-------------------------------------|------------------------|---|----------------|---|---|---|--|--|---|
| CI<br>Pr<br>Lo | ient<br>ojeo<br>ocat                                      | t:<br>ct:<br>ion:   | 0<br>0<br>: P   | )WP<br>)etai<br>(yee   | Australia<br>led Site Inv<br>magh Infan   | vestigation an  | id Geo<br>/eema                     | techi<br>gh, N         | nical Ir<br>ISW   | ives           | tigation<br>Job No: 5017190157  |   |   | Η  | lole No:   | BH03  |
| Po             | ositi   | ion:  | E33   | 0229   | .353 N6241                                | 972.538 56 N  | /IGA94                              |                        |   |                | Angle from Horizontal   | : 90°   | 5   | Surface                                      | e Elevation: 3.8   | 30 m AHD  |
| Ri             | gТ  | ype   | : Ute   | e Mo   | unted Drill                               | Rig   |                                     |                        |   |                | Mounting: Light Vehic   | cle   | [   | Oriller:                                     | TR   |   |
| Ca             | asin  | g D   | iame  | eter:  |   |   |                                     |                        |   |                |   |   | (   | Contra                                       | ctor: Stratacore   | 9   |
| Da             | ata S   | Star  | ted:  | 17/1   | 1/18                                      | Date Com  | pleted                              | : 17/                  | 11/18   |                | Logged By: DD   |   |   | Checke                                       | ed By: JB  |   |
|                | Dri   | illing  |   |  | Samplin                                   | ig & Testing  | â                                   | _                      |   |                | Mat   | terial Descriptio   | n   |  | [  |   |
| Method         |   | Resistance  | Casing  | Water  | Sar<br>Fie                                | mple or<br>ld Test  | RL (m AHI                           | Depth (m)              | Graphic<br>Log  | Classification | SOIL TYPE, plasticity or particle<br>colour, secondary and minor of<br>ROCK TYPE, grain size and t<br>fabric & texture, strength, w<br>defects and structure  | characteristic,<br>components<br>type, colour,<br>eathering,<br>re  | Moisture<br>Condition                               | Consistency<br>Relative<br>Density           | STRUC<br>& Other Obs   | TURE<br>servations  |
|                |   |   |   |  | SPT 10.00 - 1<br>0, 1, 0 N=1              | 0.45 m  |                                     |                        |   |                | Sandy CLAY: low plasticity,<br>medium grained sand <i>(conti</i>  | grey, fine to   |   |  | MARINE   | -   |
|                |   |   |   |  |   |   | -7                                  | -<br>-<br>11           |   | CL             |   |   |   | VS   |  | -<br>-<br>-   |
|                |   |   |   |  | ODT 11 50 1                               | 4.05  | -                                   | -                      |   |                | SAND: fine to medium grain  | ned, brown  |   |  |  |   |
| -WB-           | E   | E-F   |   |  | 12, 20, 18 N=                             | 38  | -8-                                 | -                      |   |                |   |   | W   |  |  |   |
|                |   |   |   |  |   |   |                                     | - 12<br>-<br>-         |   | SP             |   |   |   | MD to D                                      |  | -   |
|                |   |   |   |  | SPT 13.00 - 1                             | 3.45 m  | -9                                  | -<br>13                |   |                |   |   |   |  |  | -<br>-  |
|                |   |   |   |  | 12, 5, 8 N=13                             |   | -                                   |                        |   |                | 13.45m  |   |   |  |  |   |
|                |   |   |   |  |   |   | <br>-10-                            |                        |   |                | TERMINATED AT 13.45 m<br>Target depth   |   |   |  |  |   |
| p              |   |   |   |  |   |   |                                     | 14<br>-<br>-           |   |                |   |   |   |  |  | -   |
|                |   |   |   |  |   |   | -<br>                               | 15<br>-                |   |                |   |   |   |  |  |   |
| 0              |   |   |   |  |   |   | <br><br>-12                         |                        |   |                |   |   |   |  |  | -   |
|                |   |   |   |  |   |   |                                     | 16<br>-<br>-           |   |                |   |   |   |  |  | -   |
|                |   |   |   |  |   |   | -13-                                | -<br>17                |   |                |   |   |   |  |  | -   |
| 0              |   |   |   |  |   |   | -14                                 |                        |   |                |   |   |   |  |  | -   |
|                |   |   |   |  |   |   |                                     | - 18<br>-              |   |                |   |   |   |  |  | -   |
|                |   |   |   |  |   |   | -15                                 | -<br>-<br>19           |   |                |   |   |   |  |  | _   |
|                |   |   |   |  |   |   |                                     |                        |   |                |   |   |   |  |  |   |
|                |   |   |   |  |   |   | -16                                 | -                      |   |                |   |   |   |  |  | -   |
|                | METH<br>EX<br>HA<br>PT<br>SON<br>AH<br>PS<br>AD/V<br>AD/T | HOD<br>Exc<br>Rip<br>Hai<br>Pus<br>Sor<br>Air<br>Per<br>Sho<br>Sol<br>Sol | cavato<br>per<br>nd aug<br>sh tube<br>nic drill<br>hamm<br>cussic<br>ort spir<br>id fligh<br>id fligh | r bucke<br>er<br>er<br>er<br>on sam<br>al auge<br>t auge<br>t auge | et<br>pler<br>er<br>r: V-Bit<br>r: TC-Bit | PENETRATION<br>VE Very Easy (No<br>E Easy<br>F Firm<br>H Hard<br>VH Very Hard (Ro<br>WATER<br>Water Lin<br>Shown<br>water inf | o Resistand<br>efusal)<br>evel on D | <sub>ce)</sub><br>Date | FIE<br>SP <sup>-</sup><br>HP<br>DC<br>PSI<br>MC<br>PB<br>IMF<br>PID |                | Standard Penetration Test<br>Hand/Pocket Penetrometer<br>Dynamic Cone Penetrometer<br>Perth Sand Penetrometer<br>Moisture Content<br>Plate Bearing Test<br>Borehole Impression Test<br>Photoionisation Detector | SAMPLES       B     -       B     -       D     -       Dist     ES       U     -       Thin       MOISTURE       D     -       D     -       M     -       Mois     Wois       W     -       V     - | disturbe<br>irbed sar<br>ronmenta<br>wall tube<br>t | d sample<br>mple<br>al sample<br>e 'undistui | rbed"<br><b>SOIL CC</b><br>VS -<br>S -<br>St -<br>VSt -<br>H -<br><b>RELATI</b><br>VL -<br>L - | Very Soft<br>Soft<br>Firm<br>Stiff<br>Very Stiff<br>Hard<br>VE DENSITY<br>Very Loose<br>Loose<br>Modiwe Density |
|                | Refer to  | Roc<br>io expl  | anatory   | nt aug<br>e drillin<br>r<br>notes fo                               | g<br>or details of<br>escriptions         | water ou  | itflow                              |                        |   | 0(             | R=Resdual (uncorrected kPa)   | LL - Liqui<br>w - Mois  | d limit<br>ture con                                 | tent   | D -<br>VD -  | Dense<br>Very Dense   |

2.01.4 LIB.GLB Log CARDNO NON-CORED KYEEMAGH BOREHOLE LOGS.GPJ <<DrawingFile>> 18/12/2018 14:36 8.30.004 Datgel AGS RTA, Photo, Mor

|                  | _            |                      | ard                                 | ano                            |                                       |              |              |                 |                |   | B                           | ORE                                | HOLE LOG SHEET                                    |
|------------------|--------------|----------------------|-------------------------------------|--------------------------------|---------------------------------------|--------------|--------------|-----------------|----------------|---|-----------------------------|------------------------------------|---|
| Cli<br>Pro       | ient<br>ojeo | :<br>ct:<br>ion:     | DWP<br>Deta                         | Australia                      | a<br>nvestigation ar<br>ants School K | nd Geor      | tech         | nical Ir<br>ISW | nves           | tigation  |                             | ŀ                                  | lole No: BH04                                     |
| Po               | siti         | on: E                | 30149                               | 0.299 N62                      | 41929.836 56 I                        | MGA94        | <b>уп, к</b> | 1344            |                | Angle from Horizontal: 90°  |                             | Surfac                             | Elevation: 4.380 m AHD                            |
| Rig              | g Ty         | /pe: l               | Ite Mo                              | unted Dr                       | ill Rig                               |              |              |                 |                | Mounting: Light Vehicle   |                             | Driller:                           | TR  |
| Са               | Isin         | g Dia                | neter:                              |                                |                                       |              |              |                 |                |   |                             | Contra                             | ctor: Stratacore                                  |
| Da               | ita S        | Starte               | <b>i: 10</b> /1                     | 1/18                           | Date Com                              | pleted:      | 10/          | 11/18           |                | Logged By: DD   |                             | Checke                             | ed By: JB   |
|                  | Dri          | lling                | _                                   | Samp                           | oling & Testing                       |              |              |                 |                | Material Descri   | otion                       |                                    | T   |
| Method           |              | Casind               | Water                               | F                              | Sample or<br>Field Test               | RL (m AHD    | Depth (m)    | Graphic<br>Log  | Classification | SOIL TYPE, plasticity or particle characteristic<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure | Moisture<br>Condition       | Consistency<br>Relative<br>Density | STRUCTURE<br>& Other Observations                 |
|                  |              |                      |                                     |                                |                                       | 4            |              |                 | é              | 0.13m ASPHALT: corase grained gravel, black<br>FILL: SAND: fine to medium grained, grey   | -                           |                                    | PAVEMENT  |
|                  |              |                      |                                     | SPT 0.50 -<br>0, 0, 0 N=0      | 0.95 m                                |              |              |                 |                | 0.50m   |                             |                                    |   |
|                  |              |                      |                                     | B 1.00 - 1.2                   | 20 m                                  | { {          | - 1          |                 | SP             |   |                             | L                                  | -   |
|                  |              |                      |                                     | 5 1.00 1.2                     |                                       |              |              |                 |                |   |                             |                                    |   |
|                  |              |                      | tered                               | B 1.50 - 2.0                   | 00 m                                  | 1            |              |                 |                | 1.50m   |                             |                                    | _   |
|                  |              | _                    | incoun                              | 3, 5, 6 N=1                    | 1.95 m<br>1                           | <u> </u>     |              |                 |                | brown   | D                           |                                    |   |
|                  |              | E                    | Not E                               |                                |                                       | 1 ]          | -2           |                 |                |   |                             |                                    | -   |
|                  |              |                      |                                     |                                |                                       | 2-           |              |                 |                |   |                             |                                    |   |
|                  |              |                      |                                     |                                |                                       |              |              |                 | SP             |   |                             | MD                                 |   |
|                  |              |                      |                                     | SPT 3.00 -                     | 3.45 m                                |              | -3           |                 |                | Turning white/ pale brown in colour   |                             |                                    | -   |
|                  |              |                      |                                     | 5, 12, 15 N                    | =27                                   |              |              |                 |                |   |                             |                                    |   |
|                  |              |                      |                                     |                                |                                       | 1 +          |              |                 |                |   |                             |                                    |   |
|                  |              |                      |                                     |                                |                                       |              | _1           |                 |                | 4.00m   | D to M                      |                                    |   |
| sols             |              |                      |                                     |                                |                                       |              | 4            |                 |                | TERMINATED AT 4.00 m<br>Refusal   |                             |                                    |   |
| ring To          |              |                      |                                     |                                |                                       | 0-           |              |                 |                | Borehole Refusal Depth Collapse at 4.0m<br>10/11/18 at 16:20  |                             |                                    |   |
| Monito           |              |                      |                                     |                                |                                       |              |              |                 |                |   |                             |                                    |   |
| hoto,            |              |                      |                                     |                                |                                       | +            | - 5          |                 |                |   |                             |                                    | -   |
| RIA, F           |              |                      |                                     |                                |                                       | -1-          |              |                 |                |   |                             |                                    |   |
| AGS              |              |                      |                                     |                                |                                       | +            |              |                 |                |   |                             |                                    |   |
| Datge            |              |                      |                                     |                                |                                       | 1            | -6           |                 |                |   |                             |                                    | -   |
| 30.004           |              |                      |                                     |                                |                                       | +            | -            |                 |                |   |                             |                                    |   |
| 36.8             |              |                      |                                     |                                |                                       | -2-          |              |                 |                |   |                             |                                    |   |
| 018 14           |              |                      |                                     |                                |                                       | +            |              |                 |                |   |                             |                                    |   |
| 7/71/8           |              |                      |                                     |                                |                                       |              | -7           |                 |                |   |                             |                                    | -   |
| 6>> 1            |              |                      |                                     |                                |                                       | -3-          |              |                 |                |   |                             |                                    |   |
| winght           |              |                      |                                     |                                |                                       | +            |              |                 |                |   |                             |                                    |   |
| < <ur></ur>      |              |                      |                                     |                                |                                       | ]            | -8           |                 |                |   |                             |                                    | -   |
| SGPU             |              |                      |                                     |                                |                                       | _ +          |              |                 |                |   |                             |                                    |   |
| LOG              |              |                      |                                     |                                |                                       | 4-           |              |                 |                |   |                             |                                    |   |
| HOLE             |              |                      |                                     |                                |                                       |              |              |                 |                |   |                             |                                    |   |
| BOR              |              |                      |                                     |                                |                                       | }            | -9           |                 |                |   |                             |                                    | -   |
| MAGE             |              |                      |                                     |                                |                                       | -5-          |              |                 |                |   |                             |                                    |   |
| KYE              |              |                      |                                     |                                |                                       |              |              |                 |                |   |                             |                                    |   |
|                  | /=           |                      |                                     |                                | DENETRATION                           |              |              |                 |                |   |                             |                                    |   |
|                  | n⊏1H<br>X    | Excava               | tor buck                            | et                             | VE Very Easy (N                       | lo Resistanc | e)           | SP              | τ-<br>Τ-       | Standard Penetration Test B - E   | <b>3</b><br>Bulk disturbe   | d sample                           | e VS - Very Soft                                  |
|                  | AA<br>PT     | Hand a<br>Push t     | uger<br>Ibe                         |                                | E Easy<br>F Firm<br>H Hard            |              |              | HP<br>DC        | -<br>P-        | Hand/Pocket Penetrometer Dynamic Cone Penetrometer U - 1  | nvironment                  | inpie<br>al sample<br>e 'undistu   | e F - Firm<br>ribed' St - Stiff                   |
| S CAR            | ON<br>H      | Sonic of Air har     | rilling                             |                                | VH Very Hard (R                       | tefusal)     |              | PSI<br>MC       | P -            | Perth Sand Penetrometer Moisture Content MOISTUR  | RE                          |                                    | VSt - Very Stiff<br>H - Hard                      |
| P<br>A<br>B      | s<br>s       | Percus<br>Short s    | sion san<br>piral aug               | npler<br>Jer                   | WATER<br>Water L                      | evel on D    | ate          | PB'<br>IMF      | T -            | Plate Bearing Test D - D<br>Borehole Impression Test M - M  | Dry<br>Noist                |                                    |   |
|                  | D/V<br>D/T   | Solid fl<br>Solid fl | ght auge<br>ght auge<br>flight auge | er: v-Bit<br>er: TC-Bit<br>ner | shown                                 | flow         |              | PID             | )              | Photoionisation Detector W - W<br>Vane Shear: P=Peak PL - F   | Vet<br>Plastic limit        |                                    | VL - Very Loose<br>L - Loose<br>MD - Medium Dense |
| 2.01.4<br>Z S L4 | VB<br>RR     | Washt<br>Rock r      | ore drilli                          | ng                             | water ou                              | utflow       |              |                 |                | R=Resdual (uncorrected kPa)   | iquid limit<br>Ioisture con | tent                               | D - Dense<br>VD - Very Dense                      |
|                  | lefer t      | o explana            | ory notes                           | for details of                 |                                       | ~            | <u>م ר</u>   | יארוכ           |                |   |                             |                                    | ,   |
| al di            | bbrevi       | ations and           | basis of o                          | descriptions                   |                                       | C            | -At          | KUN             | U (            | NSVVACI) PIYLID   |                             |                                    |   |

|          |                      | )                      | Ca                             | arc                    | ino'                                  |                                     |                |                |   |            |   |                             | B                    | ORE                              | HOLE LOG SHEET                         |
|----------|----------------------|------------------------|--------------------------------|------------------------|---------------------------------------|-------------------------------------|----------------|----------------|---|------------|---|-----------------------------|----------------------|----------------------------------|--|
|          | Clie<br>Proj<br>_oca | nt:<br>ect:<br>ation   | C<br>C<br>: P                  | OWP<br>Detai<br>(vee   | Australia<br>led Site Ir<br>magh Infa | vestigation ar                      | nd Geot        | techi<br>ih. N | nical Ir<br>SW                                      | ives       | tigation  |                             |                      | F                                | Iole No: BH05                          |
| Ī        | Pos                  | ition                  | E33                            | ,<br>0122              | .818 N624                             | 1979.746 56 I                       | /<br>MGA94     |                |   |            | Angle from Horizontal:  | 90°                         | S                    | Surface                          | e Elevation: 4.560 m AHD               |
|          | Rig                  | Туре                   | : Ute                          | e Mo                   | unted Dril                            | ll Rig                              |                |                |   |            | Mounting: Light Vehicle   | le                          | 0                    | Driller:                         | TR                                     |
| H        | Casi                 | ing D                  | )iame                          | eter:                  | 1/19                                  | Data Com                            | plotod:        | 10/            | 11/10   |            |   |                             |                      | Contra                           | ctor: Stratacore                       |
| ŀ        | Jala                 | Drilling               |                                | 10/1                   | Sampl                                 | ing & Testing                       | pieted.        | 10/            | 11/10   |            | LOgged By. DD   | arial Description           | <u> </u>             | JIECKE                           | а Бу. ЈБ                               |
| -        | ъ                    | e                      |                                |                        | Gampi                                 | ing & reating                       | AHD)           | (m) r          | υ   | tion       | SOIL TYPE, plasticity or particle ch  | haracteristic,              | n =                  | C                                |  |
|          | Metho                | Resistar               | Casinę                         | Water                  | Sa<br>Fi                              | ample or<br>ield Test               | RL (m          | Dept           | Graphi<br>Log                                       | Classifica | colour, secondary and minor co<br>ROCK TYPE, grain size and typ<br>fabric & texture, strength, wea<br>defects and structure | pe, colour,<br>athering,    | Moisture<br>Conditio | Consisten<br>Relative<br>Density | STRUCTURE<br>& Other Observations      |
|          |                      |                        |                                |                        | D 0.20 - 0.5                          | 0 m                                 | - +            |                | atta atta at<br>atta atta<br>atta atta<br>atta atta | <u> </u>   | 0.20m Gravelly SAND: fine grained, Silty SAND: fine grained, dark   | black                       |                      |                                  | TOPSOIL<br>MARINE                      |
|          |                      |                        |                                |                        | SPT 0 50 - 0                          | ) 95 m                              |                |                |   |            |   | i gioj                      |                      |                                  | -                                      |
|          |                      |                        |                                |                        | 3, 6, 6 N=12                          |                                     | 1 -            |                |   |            |   |                             |                      |                                  | -                                      |
|          |                      |                        |                                |                        | D 1.00 - 1.1                          | 0 m                                 | 1 1            | - 1            |   | SP         |   |                             | D                    | L to MD                          | -                                      |
|          |                      |                        |                                |                        |                                       |                                     | [              |                |   |            |   |                             |                      |                                  | -                                      |
|          |                      |                        |                                |                        | SPT 1.50 - 1<br>2, 3, 4 N=7           | I.95 m                              | 3-             |                |   |            |   |                             |                      |                                  | -                                      |
|          |                      |                        |                                |                        |                                       |                                     | 1 1            | -2             |   |            | Silty SAND: fine grained, brow  |                             | · — –                |                                  |  |
|          |                      |                        |                                | Intered                |                                       |                                     | {              |                |   |            |   |                             |                      |                                  | _                                      |
|          | 5                    |                        |                                | Encou                  |                                       |                                     | 2-             |                |   |            |   |                             |                      |                                  | -                                      |
|          | ¥                    |                        |                                | Not                    | SPT 3 00 3                            | 2 45 m                              | [              | - 3            |   |            |   |                             |                      |                                  |  |
|          |                      |                        |                                |                        | 3, 5, 9 N=14                          |                                     | 1 }            |                |   | SP         |   | C                           | D to M               | MD                               | -                                      |
|          |                      |                        |                                |                        |                                       |                                     | 1_             |                |   |            |   |                             |                      |                                  | -                                      |
|          |                      |                        |                                |                        |                                       |                                     | +              |                |   |            |   |                             |                      |                                  | -                                      |
| e l      |                      |                        |                                |                        |                                       |                                     |                | -4             |   |            |   |                             |                      |                                  | -                                      |
| nni fil  |                      |                        |                                |                        |                                       |                                     | _ +            |                |   | L_         | 4.50m   |                             |                      |                                  | -                                      |
|          |                      |                        |                                |                        | SPT 4.50 - 4<br>2, 3, 9 N=12          | 1.95 m<br>2                         |                |                |   |            | SAND: fine to medium grained<br>brown   | ed, pale                    | м                    |                                  | -                                      |
|          |                      |                        |                                |                        |                                       |                                     |                | -5             |   | SP         |   |                             |                      | MD                               | -                                      |
| L Ý      |                      |                        |                                |                        |                                       |                                     |                |                |   |            |   |                             |                      |                                  | -                                      |
|          | •                    |                        |                                |                        |                                       |                                     | -1-            |                | <u>Nies die</u>                                     |            | 5.50m<br>TERMINATED AT 5.50 m   |                             |                      |                                  | -                                      |
| naige    |                      |                        |                                |                        |                                       |                                     |                | - 6            |   |            |   |                             |                      |                                  | -                                      |
| #00.00   |                      |                        |                                |                        |                                       |                                     | +              | 0              |   |            |   |                             |                      |                                  | -                                      |
| 20 00    |                      |                        |                                |                        |                                       |                                     | -2-            |                |   |            |   |                             |                      |                                  | -                                      |
| *        |                      |                        |                                |                        |                                       |                                     | +              |                |   |            |   |                             |                      |                                  | -                                      |
| 0/12/21  |                      |                        |                                |                        |                                       |                                     |                | -7             |   |            |   |                             |                      |                                  | _                                      |
|          |                      |                        |                                |                        |                                       |                                     | [              |                |   |            |   |                             |                      |                                  | -                                      |
| - Mildl  |                      |                        |                                |                        |                                       |                                     | -3-            |                |   |            |   |                             |                      |                                  | -                                      |
| 2012     |                      |                        |                                |                        |                                       |                                     | [              | - 8            |   |            |   |                             |                      |                                  | -                                      |
|          |                      |                        |                                |                        |                                       |                                     | }              |                |   |            |   |                             |                      |                                  | -                                      |
| Ś        |                      |                        |                                |                        |                                       |                                     | -4-            |                |   |            |   |                             |                      |                                  | -                                      |
|          |                      |                        |                                |                        |                                       |                                     |                |                |   |            |   |                             |                      |                                  | -                                      |
|          |                      |                        |                                |                        |                                       |                                     |                | -9             |   |            |   |                             |                      |                                  | -                                      |
|          |                      |                        |                                |                        |                                       |                                     |                |                |   |            |   |                             |                      |                                  | -                                      |
|          |                      |                        |                                |                        |                                       |                                     | -5             |                |   |            |   |                             |                      |                                  | -                                      |
|          | ME                   | THOD                   |                                |                        |                                       | PENETRATION                         | 1 -            |                | FIE   |            | ESTS  | SAMPLES                     |                      |                                  | SOIL CONSISTENCY                       |
|          | EX<br>R              | Ex<br>Rip              | cavato<br>oper<br>nd auc       | r bucke                | et                                    | VE Very Easy (N<br>E Easy           | lo Resistanc   | e)             | SP <sup>-</sup><br>HP                               | - 1        | Standard Penetration Test<br>Hand/Pocket Penetrometer   | B - Bulk di<br>D - Disturt  | bed sar              | d sample<br>mple                 | VS - Very Soft<br>S - Soft<br>F - Firm |
|          | PT<br>SOI            | Ha<br>Pu<br>N So       | nu aug<br>sh tube<br>nic drill | ei<br>e<br>ina         |                                       | F Firm<br>H Hard<br>VH Verv Hard (R | efusal)        |                | DC<br>PSI   | P -<br>> _ | Dynamic Cone Penetrometer<br>Perth Sand Penetrometer  | U - Thin w                  | vall tube            | a sampie<br>e 'undistu           | rbed' St - Stiff<br>VSt - Verv Stiff   |
| ر<br>Rog | AH<br>PS             | Air<br>Pe              | hamm<br>rcussic                | er<br>n sam            | pler                                  | WATER                               | ,              |                | MC<br>PB  | -<br>г-    | Moisture Content<br>Plate Bearing Test  |                             |                      |                                  |  |
|          | AS<br>AD/            | Sh<br>/V So<br>/T So   | ort spir<br>lid fligh          | al auge<br>t auge      | er<br>r: V-Bit<br>r: TC-Bit           | Water L<br>shown                    | evel on D      | ate            | IMP<br>PID  |            | Borehole Impression Test<br>Photoionisation Detector  | M - Moist<br>W - Wet        |                      |                                  | VL - Very Loose                        |
|          | HFA                  | A Ho<br>B Wa           | llow flig<br>ashbore           | ht auge<br>of the auge | jer<br>g                              | water in<br>water ou                | flow<br>utflow |                | VS  | -          | Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa)  | PL - Plastic<br>LL - Liquid | limit<br>limit       | tont                             | MD - Medium Dense<br>D - Dense         |
|          | RR                   | Ro                     | ck rolle                       | r                      |                                       |                                     |                |                |   |            |   | w - Moistu                  | ne cont              | ICIII                            | VD - Very Dense                        |
| Ş        | Refe<br>abbr         | er to exp<br>reviation | lanatory<br>s and ba           | notes fo               | or details of<br>escriptions          |                                     | C              | CAF            | RDN   | 0 (        | NSW/ACT) PTY L  | TD                          |                      |                                  |  |

|                              | $\mathcal{D}$                             | Ca   | arc  | lnoʻ                                  |  |                        |  |               |   |   |   | TE                                 | ST PIT LOG SHEET   |
|------------------------------|---|--|--|---------------------------------------|--|------------------------|--|---------------|---|---|---|------------------------------------|--|
| Clie<br>Pro                  | ent:<br>ject:<br>atior                    | ם<br>ם<br>ו: א   | OWP<br>Detai<br>(vee                           | Australia<br>led Site Ir<br>magh Infa | vestigation a  | nd Ge<br>(veem         | otechn<br>agh. NS                                  | ical<br>SW    | Investigation   |   |   | ŀ                                  | Hole No: TP01  |
| Pos                          | ition                                     | : E33  | 0227   | .528 N624                             | 2031.053 56  | MGA9                   | 4  |               | Angle from Horizontal:  | : 90°   | 5   | Surfac                             | e Elevation:   |
| Mac                          | chine                                     | Туре   | e: 10  | tonne Ex                              | cavator  |                        |  |               | Excavation Method:  |   |   |                                    |  |
| Exc                          | avati<br>e Exc                            | ion D<br>ravat   | imen<br>ed: 1                                  | sions:<br>0/11/18                     |  |                        |  |               | Logged By: JG   |   |   | Contra<br>Checke                   | ctor:  |
| E                            | cavat                                     | ion  | 50. 1  | Sampl                                 | ina & Testina  |                        |  |               | Materia   | al Description                                |   | JIECK                              | Su Dy.   |
|                              |   |  |  |                                       | <u> </u>   | -<br>E                 |  | Ę             |   |   |   |                                    |  |
| Method                       | Resistance                                | Stability  | Water  | Sa<br>Fi                              | ample or<br>ield Test  | Depth (                | Graphic<br>Log                                     | Classificatio | SOIL TYPE, plasticity or particle char<br>colour, secondary and minor comp<br>ROCK TYPE, grain size and type,<br>fabric & texture, strength, weath<br>defects and structure | racteristic,<br>conents<br>colour,<br>ering,  | Moisture<br>Condition                     | Consistency<br>Relative<br>Density | STRUCTURE<br>& Other Observations                              |
|                              |   |  |  |                                       |  | -                      | لت علت علت<br>علت علت ع<br>لت علت علت<br>علت علت ع |               | Silty SAND: fine to medium grained,<br>graded, black, with coal ash layer<br>0.20m  | poorly  | D   |                                    | TOPSOIL<br>0.00 m: PID = 0.1ppm                                |
|                              |   |  |  | ES 0.20 m<br>TP01_0.2                 |  |                        |  |               | FILL: SAND: fine to medium grained<br>brown yellow grey   | l, uniform,                                   |   |                                    | FILL<br>0.20 m: PID = 0.0 ppm                                  |
| EX                           |   |  |  | ES 0 90 m                             |  | - 0.5<br>-<br>-        |  |               |   |   | м   |                                    | -  |
|                              |   |  |  | TP01_0.9                              |  | -                      |  |               | 0.90m   |   |   |                                    |  |
|                              |   |  |  |                                       |  | - 1.0<br>-<br>-        |  |               | SAND: fine to medium grained, unifo<br>brown  | orm, yellow                                   | м   | F                                  |  |
| <u> </u>                     |   |  |  |                                       |  | 4.5                    |  |               | 1.40m<br>TERMINATED AT 1.40 m   |   |   |                                    |  |
|                              |   |  |  |                                       |  | - 1.5                  |  |               | Target depth  |   |   |                                    | -  |
|                              |   |  |  |                                       |  | -                      |  |               |   |   |   |                                    |  |
|                              |   |  |  |                                       |  | -2.0                   |  |               |   |   |   |                                    | _  |
|                              |   |  |  |                                       |  | E                      |  |               |   |   |   |                                    |  |
|                              |   |  |  |                                       |  | -                      |  |               |   |   |   |                                    |  |
|                              |   |  |  |                                       |  | - 2.5                  |  |               |   |   |   |                                    |  |
|                              |   |  |  |                                       |  | -                      |  |               |   |   |   |                                    |  |
|                              |   |  |  |                                       |  | - 3.0                  |  |               |   |   |   |                                    | _  |
|                              |   |  |  |                                       |  | F                      |  |               |   |   |   |                                    |  |
|                              |   |  |  |                                       |  | -                      |  |               |   |   |   |                                    |  |
|                              |   |  |  |                                       |  | - 3.5                  |  |               |   |   |   |                                    | -  |
|                              |   |  |  |                                       |  | F                      |  |               |   |   |   |                                    |  |
|                              |   |  |  |                                       |  | -4.0                   |  |               |   |   |   |                                    | -  |
|                              |   |  |  |                                       |  | F                      |  |               |   |   |   |                                    | -  |
|                              |   |  |  |                                       |  |                        |  |               |   |   |   |                                    |  |
|                              |   |  |  |                                       |  | -4.5                   |  |               |   |   |   |                                    | -  |
|                              |   |  |  |                                       |  |                        |  |               |   |   |   |                                    |  |
| ME<br>FX                     |   | cavato   | r buck   | et                                    | PENETRATION  |                        |  | F             | FIELD TESTS<br>OPT - Standard Penetration Test  | SAMPLES                                       | ( disturbe                                | d sample                           | SOIL CONSISTENCY   |
| R<br>HA<br>PT<br>SC          | Ri<br>Ri<br>Pu<br>N Sc                    | pper<br>and aug<br>ish tube<br>onic dril                     | er<br>er<br>ing                                | ~                                     | VE Very Easy (<br>E Easy<br>F Firm<br>H Hard<br>VH Very Hard (   | No Resista<br>Refusal) | ince)  |               | HP - Hand/Pocket Penetrometer<br>OCP - Dynamic Cone Penetrometer<br>PSP - Perth Sand Penetrometer<br>Mainture Contact   | D - Dist<br>ES - Env<br>U - Thir              | ironmenta<br>wall tube                    | mple<br>al sample<br>e 'undistu    | s - Soft<br>F - Firm<br>VSt - Very Stiff                       |
| PS<br>AS                     | Pe<br>Sh                                  | ercussion<br>ort spir  | ei<br>on sam<br>al augi<br>t auge              | pler<br>er<br>r: V-Bit                | WATER  | Level on               | Date   | F             | PBT - Plate Bearing Test<br>MP - Borehole Impression Test   | D - Dry<br>M - Mois                           | st  |                                    |  |
| , AD<br>AD<br>HF<br>WE<br>RF | ,, v 50<br>0/T So<br>7A Ho<br>8 ₩<br>8 Ro | blid fligh<br>blid fligh<br>blow flig<br>ashbor<br>bck rolle | t auge<br>t auge<br>ght aug<br>e drillin<br>er | r: TC-Bit<br>ler<br>g                 | water in the second sec | nflow<br>outflow       |  | F<br>  \      | <ul> <li>Photoionisation Detector</li> <li>Vane Shear; P=Peak,<br/>R=Resdual (uncorrected kPa)</li> </ul>   | W - Wet<br>PL - Plas<br>LL - Liqu<br>w - Mois | t<br>stic limit<br>uid limit<br>sture con | tent                               | L - Loose<br>MD - Medium Dense<br>D - Dense<br>VD - Very Dense |
| Ref<br>abb                   | fer to exp<br>previation                  | planatory<br>ns and ba                                       | notes fo                                       | or details of<br>escriptions          |  |                        | CAR  |               | NO (NSW/ACT) PTY I  | LTD   |   |                                    | ·  |

| 6   | $\square$  |                 | arc                  | Ino                                  |                         |  |                         |   |  |  | TE  | ST PIT LOG SHEET  |
|---|--|-----------------|----------------------|--------------------------------------|-------------------------|--|-------------------------|---|--|--|---|---|
| Clie<br>Pro<br>Loc  | ent:<br>ject:<br>atio  | :  <br>n:       | OWP<br>Detai<br>Kyee | Australia<br>led Site I<br>magh Infa | nvestigation a          | nd Ge<br>(yeema  | otechn<br>agh, NS       | ical<br>SW  | Investigation  |  | ŀ   | Hole No: TP02   |
| Pos<br>Mac  | itior  | n: E33<br>e Tvp | 0192<br>9: 10        | .866 N624<br>tonne Ex                | 42040.364 56<br>cavator | MGA9   | 4                       |   | Angle from Horizontal: 90°<br>Excavation Method:   |  | Surfac  | e Elevation:  |
| Exc   | avat   | tion D          | imen                 | sions:                               |                         |  |                         |   |  |  | Contra  | ctor:   |
| Dat   | e Ex   | cavat           | ed: 1                | 0/11/18                              |                         |  |                         |   | Logged By: JG  |  | Checke  | ed By:  |
| E)  | kcava  | ation           |                      | Samp                                 | ling & Testing          |  |                         |   | Material Description   |  |   |   |
| Method  | Resistance   | Stability       | Water                | S                                    | ample or<br>ïeld Test   | Depth (m)  | Graphic<br>Log          | Classification                                      | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure   | Moisture<br>Condition  | Consistency<br>Relative<br>Density              | STRUCTURE<br>& Other Observations   |
|   |  |                 |                      | ES 0.10 m<br>TP02_0.1<br>ES 0.40 m   |                         |  | نه عله عله<br>عله عله ۲ |   | 0.10m Silty SAND: fine to medium grained, poorly<br>graded, brown grey<br>FILL: Silty SAND: fine to medium grained, uniform,   | ,-<br>D  |   | TOPSOIL<br>0.00 m: PID = 3.5 ppm  |
|   |  |                 |                      | 1P02_0.4                             |                         | F  |                         |   | yellow brown   |  |   | 0.10 m: PID = 8.3 ppm   |
| ► EX-   |  |                 |                      |                                      |                         | 0.5<br>-<br>-  |                         |   | SAND: fine to medium grained, uniform, yellow<br>brown   | м  | F   | MARINE  |
|   |  | _               |                      |                                      |                         | - 1.0<br>-<br>-<br><br>- 1.5                           |                         |   | TERMINATED AT 0.90 m<br>Target depth   |  |   |   |
|   |  |                 |                      |                                      |                         | -<br>-<br>-<br>- 2.0<br>-                              |                         |   |  |  |   |   |
|   |  |                 |                      |                                      |                         | -<br>-<br>- 2.5<br>-                                   |                         |   |  |  |   |   |
|   |  |                 |                      |                                      |                         | - 3.0  |                         |   |  |  |   |   |
|   |  |                 |                      |                                      |                         | -<br>-<br>- 3.5<br>-<br>-                              |                         |   |  |  |   |   |
|   |  |                 |                      |                                      |                         | -<br>- 4.0<br>-  |                         |   |  |  |   |   |
|   |  |                 |                      |                                      |                         | -4.5<br>-<br>-<br>-                                    |                         |   |  |  |   |   |
| ME<br>EX<br>R<br>HA<br>PT<br>SC<br>AH<br>PS<br>AD<br>AD<br>HF<br>WI<br>RF | METHOD     PENETRATION       EX     Excavator bucket     VE     Very Easy (No Resist       R     Ripper     E     Easy       PT     Push tube     F     Firm       SON     Sonic drilling     H     Hard (Refusal)       AH     Air hammer     WATER     Water Level of       AD/T     Solid flight auger: TC-Bit     F     water inflow       HFA     Hollow flight auger     Water cutflow     water outflow |                 |                      |                                      |                         | No Resista<br>Refusal)<br>Level on<br>nflow<br>putflow | ,<br>nce)<br>Date       | F<br>S<br>H<br>D<br>P<br>N<br>P<br>I<br>N<br>P<br>V | Bit Difference     Samples       P     - Standard Penetration Test     B     - Bit       P     - Hand/Pocket Penetrometer     D     - Dit       CP     - Dynamic Cone Penetrometer     U     - Tit       CP     - Perth Sand Penetrometer     U     - Tit       CF     - Perth Sand Penetrometer     U     - Tit       CF     - Plate Bearing Test     D     - Dit       TP     - Bate Bearing Test     D     - Dit       MD     - Photoionisation Detector     W     - W       S     - Vane Shear; P=Peak,     PL     - Pit       R=Resdual (uncorrected kPa)     W     - W | Ik disturbed<br>sturbed sa<br>nvironmen<br>in wall tub<br>E<br>Y<br>oist<br>et<br>astic limit<br>quid limit<br>oisture cor | ed sample<br>ample<br>tal sample<br>ve 'undistu | SOIL CONSISTENCY<br>VS - Very Soft<br>S - Soft<br>F - Firm<br>VSt - Stiff<br>VSt - Very Siff<br>H - Hard<br>RELATIVE DENSITY<br>VL - Very Loose<br>L - Loose<br>MD - Medium Dense<br>D - Dense<br>VD - Very Dense |
| Ret<br>abb  | fer to ex<br>previatio   | xplanatory      | notes fo             | or details of<br>escriptions         |                         |  | CAR                     | DN  | NO (NSW/ACT) PTY LTD   |  |   |   |

|  | $\square$                   |                                    | arc                        | ino                                   |                       |  |  |  |   |  |                       | TE                              | ST PIT LOG SHEE                                   |
|--|-----------------------------|------------------------------------|----------------------------|---------------------------------------|-----------------------|--|--|--|---|--|-----------------------|---------------------------------|---|
| Clie<br>Proj<br>Loc  | nt:<br>ect:<br>atio         | ן<br>ו<br>ח: ו                     | OWP<br>Detai<br>Kyee       | Australia<br>led Site Ir<br>magh Infa | vestigation a         | nd Ge<br>(yeem   | otechn<br>agh, NS  | ical<br>SW   | Investigation<br>Job No: 5017190157   |  |                       | ł                               | Hole No: TP03                                     |
| Pos  | ition                       | n: 56                              | MGA                        | .94                                   |                       | -  |  |  | Angle from Horizontal:  | : 90°  | 5                     | Surfac                          | e Elevation:                                      |
| Mac  | hine                        | • Type                             | e: 10                      | tonne Ex                              | cavator               |  |  |  | Excavation Method:  |  |                       |                                 |   |
| EXC<br>Date  | avat                        | ion D                              | Imer                       | 1510NS:                               |                       |  |  |  | Logged By: IG   |  |                       | Contra                          | ed By:  |
| Ex   |                             | tion                               |                            | Samp                                  | ina & Testina         |  |  |  | Materia   | l Description  |                       | Oneck                           | cu by.  |
| ethod  | sistance                    | ability                            | Vater                      | S                                     | ample or<br>ield Test | Depth (m)  | raphic<br>Log  | sification   | SOIL TYPE, plasticity or particle char<br>colour, secondary and minor comp<br>ROCK TYPE, grain size and type, | racteristic,<br>ponents<br>colour,   | oisture<br>ondition   | isistency<br>elative<br>bensity | STRUCTURE<br>& Other Observations                 |
| Σ  | Res                         | -<br>S                             | >                          | FS 0 20 m                             |                       |  | <del>ل</del>   | Clas   | defects and structure   | noortu   | Σŭ                    | 0<br>2<br>E                     | TOPSOIL   |
| Ī  |                             |                                    |                            | TP03_0.2                              |                       | ļ  | علد علد ع<br>لد علد علد<br>علد علد ع   | <u> </u>   | graded, grey brown mottled white  |  | D                     | -                               | 0.00 m: PID = 0.2ppm                              |
|  |                             |                                    |                            |                                       |                       | -<br>0.5<br>   |  | ~ ~ ~ ~ ~ ~ ~ ~                                      | FILL: Silty SAND: fine to medium gra<br>graded, white grey brown mottled bla                                  | ained, poorly<br>ack   | D                     |                                 | HLL<br>0.20 m: PID = 1.2ppm                       |
| EX   |                             |                                    |                            | ES 1.20 m<br>TP03_1.2                 |                       | -<br>-<br>1.0<br>-   |  | ~ ~ ~ ~ ~ ~ ~ ~ ~                                    | 1.20m   |  |                       |                                 |   |
|  |                             |                                    |                            |                                       |                       | 1  |  |  | SAND: fine to medium grained, unifo   | orm, yellow  |                       |                                 |   |
|  |                             |                                    |                            |                                       |                       | -<br>1.5<br>-  |  |  | 1.70m   |  | М                     | F                               |   |
| •  |                             |                                    |                            |                                       |                       | -  |  |  | TERMINATED AT 1.70 m<br>Target depth  |  |                       |                                 |   |
|  |                             |                                    |                            |                                       |                       | - 2.0  |  |  |   |  |                       |                                 |   |
|  |                             |                                    |                            |                                       |                       | F  |  |  |   |  |                       |                                 |   |
|  |                             |                                    |                            |                                       |                       | -25  |  |  |   |  |                       |                                 |   |
|  |                             |                                    |                            |                                       |                       | -  |  |  |   |  |                       |                                 |   |
|  |                             |                                    |                            |                                       |                       | -  |  |  |   |  |                       |                                 |   |
|  |                             |                                    |                            |                                       |                       | - 3.0  |  |  |   |  |                       |                                 |   |
|  |                             |                                    |                            |                                       |                       | ŀ  |  |  |   |  |                       |                                 |   |
|  |                             |                                    |                            |                                       |                       | -<br>3.5   |  |  |   |  |                       |                                 |   |
|  |                             |                                    |                            |                                       |                       | F  |  |  |   |  |                       |                                 |   |
|  |                             |                                    |                            |                                       |                       | E  |  |  |   |  |                       |                                 |   |
|  |                             |                                    |                            |                                       |                       | -  |  |  |   |  |                       |                                 |   |
|  |                             |                                    |                            |                                       |                       | ŀ  |  |  |   |  |                       |                                 |   |
|  |                             |                                    |                            |                                       |                       | -4.5<br>-  |  |  |   |  |                       |                                 |   |
|  |                             |                                    |                            |                                       |                       | ŀ  |  |  |   |  |                       |                                 |   |
| ME   | THOE                        | <br>>                              |                            |                                       | PENETRATION           |  |  | <br>  F  | ELD TESTS   | SAMPLES  |                       |                                 | SOIL CONSISTENCY                                  |
| ME I HOD     PENETRATION       EX     Excavator bucket     VE     Very Easy (No Resistar       R     Ripper     Easy     Easy       HA     Hand auger     F     Firm       PT     Push tube     H     Hard       SON     Sonic drilling     VH     Very Hard (Refusal)       AH     Air hammer     PS     Percussion sampler       AS     Short spiral auger     AD/T     Solid flight auger: TC-Bit |                             |                                    |                            | nce)<br>Date                          | H<br>D<br>P<br>M<br>P | PT       -       Standard Penetration Test         P       -       Hand/Pocket Penetrometer         CP       -       Dynamic Cone Penetrometer         SP       -       Perth Sand Penetrometer         C       -       Moisture Content         BT       -       Plate Bearing Test         IP       -       Borehole Impression Test         ID       -       Photoionisation Detector | B - Bulk<br>D - Distu<br>ES - Envi<br>U - Thin<br>MOISTURE<br>D - Dry<br>M - Mois<br>W - Wet | disturbe<br>urbed sau<br>ronmenta<br>wall tube<br>st | d sample<br>mple<br>al sample<br>e 'undistu   | e VS - Very Soft<br>S - Soft<br>F - Firm<br>Irbed' St - Stiff<br>VSt - Very Stiff<br>H - Hard<br><b>RELATIVE DENSITY</b><br>VL - Very Loose<br>L - Loose |                       |                                 |   |
| HF/<br>WE<br>RR  | A H<br>B W<br>R<br>er to ev | ollow flig<br>/ashbor<br>ock rolle | ght aug<br>e drillin<br>er | ger<br>Ig<br>or details of            | water of water of     | outflow  |  |  | S - Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa)  | LL - Pias<br>LL - Liqui<br>w - Mois  | id limit<br>sture con | tent                            | MD - Medium Dense<br>D - Dense<br>VD - Very Dense |
| abb  | reviatio                    | ins and ba                         | asis of d                  | escriptions                           |                       |  | CAR  | יוט  | NO (INSVV/ACT) PTY I  | ∟וט  |                       |                                 |   |

|   |   | ) C   | arc  | lno'  |   |                         |                |   |   | ΤE   | ST PIT LOG SHEET   |
|---|---|---|--|---|---|-------------------------|----------------|---|---|--|--|
| Clie  | ent:  | 1   | )<br>Detai   | Australia<br>led Site Investigation   | and Ge  | otechn                  | ical           | Investigation   |   | ŀ  | Hole No: TP04  |
| Loc   | atio  | n: I  | Kyee   | magh Infants School,  | Kyeema  | agh, NS                 | SW             | Job No: 5017190157  |   |  | Sheet: 1 of 1  |
| Pos   | sitior  | n: See  | atta   | ched plan   |   |                         |                | Angle from Horizontal: 90°  |   | Surfac   | e Elevation:   |
| Fxc   | cnine   | ion D   | 9: 10<br>imer  | tonne Excavator   |   |                         |                | Excavation Method:  |   | Contra   | ctor:  |
| Dat   | e Ex  | cavat   | ed: 1  | 0/11/18   |   |                         |                | Logged By: JG   |   | Check  | ed By:   |
| E   | xcava   | tion  |  | Sampling & Testing  |   |                         |                | Material Description  |   |  |  |
| Method  | Resistance  | Stability   | Water  | Sample or<br>Field Test   | Depth (m)   | Graphic<br>Log          | Classification | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure  | Moisture<br>Condition   | Consistency<br>Relative<br>Density                 | STRUCTURE<br>& Other Observations  |
|   |   |   |  | ES 0.10 m<br>TP04 0.1   |   | لد علد علد<br>علد علد ع | <u> </u>       | 0.10m Silty SAND: fine to medium grained, poorly  |   |  | TOPSOIL<br>0.00 m: PID = 2.6ppm  |
|   |   |   |  | ES 0.40 m<br>TP04_0.4   |   |                         | X X X X        | FILL: Silty SAND: fine to medium grained, poorly graded, brown grey   | D   |  | FILL<br>0.10 m: PID = 1.7ppm   |
| EX  |   |   |  |   | -0.5  |                         | <u> </u>       | 0.40m SAND: fine to medium grained, uniform, yellow brown   | +   | <u>+</u>   | MARINE   |
|   |   |   |  |   | -   |                         |                | 0.90m   | M   | F  |  |
|   |   |   |  |   | - 1.0   |                         |                | TERMINATED AT 0.90 m<br>Target depth  |   |  | -  |
|   |   |   |  |   | -   |                         |                |   |   |  |  |
|   |   |   |  |   | - 1.5   |                         |                |   |   |  | -  |
|   |   |   |  |   | -   |                         |                |   |   |  |  |
|   |   |   |  |   | -2.0  |                         |                |   |   |  | _  |
| soos  |   |   |  |   | ŀ   |                         |                |   |   |  |  |
| Aonitoring T  |   |   |  |   | -2.5  |                         |                |   |   |  | -  |
| TA, Photo, N  |   |   |  |   | -   |                         |                |   |   |  |  |
| tgel AGS R1   |   |   |  |   | - 3.0   |                         |                |   |   |  | -  |
| 0.0.000 Dai   |   |   |  |   | -   |                         |                |   |   |  |  |
| 18 16:17 10   |   |   |  |   | - 3.5   |                         |                |   |   |  | -  |
| > 03/12/20  |   |   |  |   |   |                         |                |   |   |  |  |
| rawingFile>   |   |   |  |   | - 4.0   |                         |                |   |   |  | -  |
| S.GPJ < <d< td=""><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td></d<> |   |   |  |   | -   |                         |                |   |   |  |  |
| HOLE LOGS   |   |   |  |   | - 4.5<br>-  |                         |                |   |   |  | -  |
| AGH BOREI   |   |   |  |   | -   |                         |                |   |   |  |  |
| DNO.GLB Log CARDNO NON-COREU KYEER  | ETHOL<br>C E<br>R H<br>PON S<br>H A<br>S P<br>ON S<br>H A<br>S S<br>O/V S<br>O/V S<br>O/V S<br>O/V S<br>O/V S<br>O/V S<br>A H<br>B W<br>R<br>for to c | Caracteria<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>construction<br>constru | r buck<br>ger<br>e<br>ling<br>ler<br>on sam<br>ral auge<br>at auge<br>ght auge<br>ght auge<br>ght auge<br>ght auge | PENETRATION<br>ve Very Easy<br>F Easy<br>F Firm<br>H Hard<br>VH Very Hard<br>VH Very Hard<br>VH Very Hard<br>WATER<br>Water<br>Show<br>water<br>water<br>water<br>water | I<br>(No Resista<br>(Refusal)<br>r Level on<br>n<br>inflow<br>outflow | I<br>Ince)<br>Date      |                | IELD TESTS       SAMPLES         IPT - Standard Penetration Test       B       - Bui         IP - Hand/Pocket Penetrometer       D       Dis         ICP - Dynamic Cone Penetrometer       U       - Thi         ISP - Perth Sand Penetrometer       U       - Thi         ISP - Perth Sand Penetrometer       MOISTURE         IGC - Moisture Content       D       Dr         IP - Barehole Impression Test       M       Mo         ID - Photoionisation Detector       W       We         IS - Vane Shear; P=Peak,       LL       Liq         IL - Liq       W       - Mo | k disturbe<br>turbed sa<br>vironmenh<br>n wall tub<br>;<br>;<br>ist<br>stic limit<br>istic limit<br>uid limit<br>isture cor | l<br>ed sample<br>mple<br>cal sample<br>e 'undistu | SOIL CONSISTENCY       e     VS       S     Soft       B     F       F     Firm       VSt     Stiff       VSt     Very Stiff       H     Hard       RELATIVE DENSITY       VL     Very Loose       L     Loose       MD     Medium Dense       D     Dense       VD     Very Dense |
| 지 Re<br>ab  | rer to ex<br>previatio  | planatory<br>ons and b  | notes f<br>asis of d   | or details of<br>escriptions  |   | CAR                     | D              | NO (NSW/ACT) PTY LTD  |   |  |  |

| C  |  | ) C  | ard  | dno   |   |                |                |  |  | TE                                    | ST PIT LOG SHEET  |
|--|--|--|--|---|---|----------------|----------------|--|--|---------------------------------------|---|
| Cli  | ent:   | <del>1</del> .   | DWP<br>Dota  | Australia   | and Go  | otechn         | ical           | Investigation  |  | ŀ                                     | lole No: TP05   |
| Lo   | cati   | on:  | Kyee   | magh Infants School,  | Kyeema  | agh, NS        | SW             | Job No: 5017190157   |  |                                       | Sheet: 1 of 1   |
| Po   | sitic  | on: Se   | e atta   | ched plan   |   |                |                | Angle from Horizontal: 90°   |  | Surface                               | e Elevation:  |
| Ma   | cava   | ne Typ<br>ation  | )e: 10<br>Dimei  | tonne Excavator   |   |                |                | Excavation Method:   |  | Contra                                | ctor  |
| Da   | te E   | xcava  | ted: 1   | 10/11/18  |   |                |                | Logged By: JG  |  | Checke                                | ed By:  |
| E  | xcav   | /ation   |  | Sampling & Testing  |   |                |                | Material Description   | on   |                                       | -   |
| Method   | Racistanca   | Stability  | Water  | Sample or<br>Field Test   | Depth (m)   | Graphic<br>Log | Classification | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure   | Moisture<br>Condition  | Consistency<br>Relative<br>Density    | STRUCTURE<br>& Other Observations   |
|  | +  |  |  | ES 0.10 m<br>TP05 0.1   | <u> </u>  |                |                | 0.10m FILL: Silty SAND: fine to medium grained, unifor   | n,   | <u> </u>                              | FILL<br>0.00 m: PID = 3.7ppm  |
|  |  |  |  | (   |   |                |                | SAND: fine to medium grained, uniform, white   |  |                                       | MARINE<br>0 10 m <sup>-</sup> PID = 0 8ppm  |
|  |  |  |  | ES 0.90 m<br>TP05_0.9   | - 0.5<br>   |                |                | 0.90m<br>TERMINATED AT 0.90 m<br>Target depth  | м  | F                                     | -   |
| i Datgel AGS RTA, Photo, Monitoring Loois                              |  |  |  |   | -<br>-2.0<br>-<br>-2.5<br>-<br>-<br>-3.0<br>-   |                |                |  |  |                                       |   |
| c.LOGS.GPJ < <drawingfile>&gt; 03/12/2018 16:17 10.0.000</drawingfile> |  |  |  |   | -<br>- 3.5<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>- |                |                |  |  |                                       | -   |
| AGH BOREHUL  |  |  |  |   | -   |                |                |  |  |                                       |   |
| ARDNO.GLB LOG CARDNO NON-CORED KYLELN                                  | A<br>T<br>ON<br>H<br>S<br>S<br>D/V<br>D/T<br>FA<br>/B<br>R | DD<br>Excava<br>Ripper<br>Hand at<br>Push tu<br>Sonic d<br>Air ham<br>Percuss<br>Solid flig<br>Solid flig<br>Solid flig<br>Solid flig<br>Solid flig<br>Rock ro | or buck<br>uger<br>be<br>illing<br>mer<br>ion san<br>iral auge<br>ht auge<br>ht auge<br>light au<br>re drillin<br>ler<br>ry notes of the<br>ry notes of | I PENETRATIO<br>et VE Very Easy<br>F Firm<br>H Hard<br>VH Very Hard<br>VH Very Hard<br>WATER<br>Show<br>yer<br>r: TC-Bit<br>rg<br>water<br>↓<br>water<br>↓<br>very fassission<br>water<br>↓<br>very fassission<br>very  I<br>(No Resista<br>(Refusal)<br>r Level on<br>n<br>· inflow<br>· outflow                                 | nce)<br>Date   |                | IELD TESTS       SAMPLI         IPT - Standard Penetration Test       B         IP - Hand/Pocket Penetrometer       D         ICP - Dynamic Cone Penetrometer       U         ISP - Perth Sand Penetrometer       U         IC - Moisture Content       MOISTL         PBT - Plate Bearing Test       D         IP - Borehole Impression Test       M         IP - Photoionisation Detector       W         IP - Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa)       LL         NO (NSW/ACT) PTY I TD | ES<br>Bulk disturbed<br>Disturbed sa<br>Environmeni<br>Thin wall tub<br>RE<br>Dry<br>Moist<br>Wet<br>Plastic limit<br>Moisture cor | I<br>imple<br>at sample<br>e 'undistu | SOIL CONSISTENCY         VS       - Very Soft         S       - Soft         F       - Firm         vSt       - Stiff         VSt       - Very Siff         H       - Hard         RELATIVE DENSITY         VL       - Very Loose         L       - Loose         MD       - Medium Dense         D       - Dense         VD       - Very Dense |

|           |              |                 | C                      | arc   | lno                                 |                  |                         |               |  |                              | TE                                 | ST PIT LOG SHEET                      |
|-----------|--------------|-----------------|------------------------|---|-------------------------------------|------------------|-------------------------|---------------|--|------------------------------|------------------------------------|---------------------------------------|
| CI        | lien<br>roje | t:<br>ect:      | ]<br>]                 | DWP<br>Detai  | Australia<br>led Site Investigation | on and Ge        | otechn                  | ical          | Investigation  |                              | ŀ                                  | Hole No: TP06                         |
|           | ocat         | tion            | : 1                    | <yee< th=""><th>magh Infants Schoo</th><th>ol, Kyeema</th><th>agh, NS</th><th>SW</th><th>Job No: 5017190157</th><th></th><th></th><th>Sheet: 1 of 1</th></yee<> | magh Infants Schoo                  | ol, Kyeema       | agh, NS                 | SW            | Job No: 5017190157   |                              |                                    | Sheet: 1 of 1                         |
|           | osit<br>ach  | ion:            | Type                   | atta  | ched plan                           |                  |                         |               | Angle from Horizontal: 90°   |                              | Surfac                             | e Elevation:                          |
| E         | kca          | vati            | on D                   | j. 10<br>imer   | sions:                              |                  |                         |               | Excavation Method.   |                              | Contra                             | ctor:                                 |
| Da        | ate          | Exc             | avat                   | ed: 1   | 0/11/18                             |                  |                         |               | Logged By: JG  |                              | Check                              | ed By:                                |
|           | Exca         | avati           | on                     |   | Sampling & Testin                   | g                |                         |               | Material Descriptio  | n                            |                                    | •                                     |
|           |              | 0               |                        |   |                                     | Ē                |                         | Ę             |  |                              |                                    |                                       |
| Method    |              | Resistance      | Stability              | Water   | Sample or<br>Field Test             | Depth (i         | Graphic<br>Log          | Classificatic | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure | Moisture<br>Condition        | Consistency<br>Relative<br>Density | STRUCTURE<br>& Other Observations     |
|           |              |                 |                        |   | ES 0.10 m<br>TP06_0 1               |                  | لد علد علد<br>علد علد ع |               | 0.10m Gravelly SAND: fine grained, poorly graded,  | , <u>D</u>                   |                                    | TOPSOIL                               |
|           |              |                 |                        |   | ES 0.30 m                           |                  |                         |               | FILL: GRAVEL: medium, poorly graded, black   |                              |                                    | FILL                                  |
|           |              |                 |                        |   | 1F00_0.3                            |                  |                         |               | 0.30m mottled yellow SAND: fine to medium grained, uniform, yellow   | +                            | +                                  |                                       |
| Î         | )            |                 |                        |   |                                     | - 0.5            |                         |               | brown  |                              |                                    | _                                     |
|           | ,            |                 |                        |   |                                     | -                |                         |               | 0.80m  | м                            | F                                  |                                       |
| F         |              |                 |                        |   |                                     |                  | 1                       |               | TERMINATED AT 0.80 m   |                              |                                    |                                       |
|           |              |                 |                        |   |                                     | - 1.0            |                         |               |  |                              |                                    | -                                     |
|           |              |                 |                        |   |                                     | -                |                         |               |  |                              |                                    |                                       |
|           |              |                 |                        |   |                                     | Ľ                |                         |               |  |                              |                                    |                                       |
|           |              |                 |                        |   |                                     | -                |                         |               |  |                              |                                    |                                       |
|           |              |                 |                        |   |                                     | - 1.5            |                         |               |  |                              |                                    | -                                     |
|           |              |                 |                        |   |                                     | Ē                |                         |               |  |                              |                                    | -                                     |
|           |              |                 |                        |   |                                     | -                |                         |               |  |                              |                                    |                                       |
|           |              |                 |                        |   |                                     | -                |                         |               |  |                              |                                    |                                       |
|           |              |                 |                        |   |                                     | -2.0             |                         |               |  |                              |                                    | -                                     |
|           |              |                 |                        |   |                                     | Ē                |                         |               |  |                              |                                    |                                       |
| s         |              |                 |                        |   |                                     | -                |                         |               |  |                              |                                    |                                       |
| 1g Toc    |              |                 |                        |   |                                     | -                |                         |               |  |                              |                                    |                                       |
| nitorir   |              |                 |                        |   |                                     | - 2.5            |                         |               |  |                              |                                    | -                                     |
| to,<br>Mo |              |                 |                        |   |                                     | -                |                         |               |  |                              |                                    |                                       |
| , Pho     |              |                 |                        |   |                                     | -                |                         |               |  |                              |                                    |                                       |
| S RT/     |              |                 |                        |   |                                     | -30              |                         |               |  |                              |                                    |                                       |
| Jel AG    |              |                 |                        |   |                                     | - 0.0            |                         |               |  |                              |                                    |                                       |
| 0 Dat     |              |                 |                        |   |                                     | F                |                         |               |  |                              |                                    |                                       |
| 00.0.0    |              |                 |                        |   |                                     | Ę                |                         |               |  |                              |                                    |                                       |
| :17 1(    |              |                 |                        |   |                                     | - 3.5            |                         |               |  |                              |                                    | -                                     |
| 118 16    |              |                 |                        |   |                                     | F                |                         |               |  |                              |                                    |                                       |
| /12/20    |              |                 |                        |   |                                     | Ę                |                         |               |  |                              |                                    |                                       |
| \$        |              |                 |                        |   |                                     | F                |                         |               |  |                              |                                    |                                       |
| ngFile    |              |                 |                        |   |                                     | -4.0             |                         |               |  |                              |                                    | -                                     |
| Drawi     |              |                 |                        |   |                                     | Ę                |                         |               |  |                              |                                    |                                       |
| а<br>К    |              |                 |                        |   |                                     | -                |                         |               |  |                              |                                    |                                       |
| GS.G      |              |                 |                        |   |                                     | F                |                         |               |  |                              |                                    |                                       |
| LE LO     |              |                 |                        |   |                                     | 4.5              |                         |               |  |                              |                                    | -                                     |
| ЯËНО      |              |                 |                        |   |                                     | Ę                |                         |               |  |                              |                                    |                                       |
| H BO      |              |                 |                        |   |                                     | ŀ                |                         |               |  |                              |                                    |                                       |
| MAG       |              |                 |                        |   |                                     | <u> </u>         |                         |               |  |                              |                                    |                                       |
| , K       |              | HOD             | cauct-                 | r buel  | PENETRA                             | TION             |                         | F             | IELD TESTS SAMPLE  | S<br>Bulk disturt            | ad some'                           | SOIL CONSISTENCY                      |
|           | R<br>HA      | ⊏X<br>Rip<br>Ha | per<br>nd auc          | i Ducki   | VE Very<br>E Easy                   | Easy (No Resista | ance)                   |               | IP - Hand/Pocket Penetrometer D -  | Disturbed sa                 | imple                              | S - Very Soll<br>S - Soft<br>F - Firm |
|           | PT<br>SON    | Pu              | sh tube<br>nic drill   | e<br>lina   | F Firm<br>H Hard<br>VH Voor         | Hard (Refueal)   |                         |               | DCP - Dynamic Cone Penetrometer     U       VSP - Perth Sand Penetrometer     U  | Thin wall tub                | e 'undistu                         | irbed' St - Stiff<br>VSt - Verv Stiff |
| ž /       | AH<br>PS     | Air<br>Pe       | hamm                   | er<br>on sam  | pler WATER                          | ara (nordsar)    |                         | Ň             | IC - Moisture Content MOISTU   | RE                           |                                    | H - Hard                              |
| CARDI     | AŚ<br>AD/V   | Sh<br>Sh        | ort spir<br>lid fligh  | al aug  | er W<br>r: V-Bit V-Bit              | ater Level on    | Date                    |               | MP - Borehole Impression Test M -  | Dry<br>Moist                 |                                    | RELATIVE DENSITY<br>VL - Very Loose   |
| Bol H     | AD/T<br>HFA  | So<br>Ho        | lid fligh<br>llow flig | t auge<br>ght aug   | r: TC-Bit                           | ater inflow      |                         |               | UD - Photoionisation Detector   W -<br>S - Vane Shear; P=Peak,   PL -  | /vet<br>Plastic limit        |                                    | L - Loose<br>MD - Medium Dense        |
| I GLB     | WB<br>RR     | Wa<br>Ro        | ashbor<br>ck rolle     | e drillin<br>er   | g — 🗸 w                             | ater outflow     |                         |               | R=Resdual (uncorrected kPa)  | Liquia limit<br>Noisture cor | ntent                              | D - Dense<br>VD - Very Dense          |
|           | Refer        | to exp          | lanatorv               | notes f   | or details of                       |                  |                         | <u>י</u> חו   |  |                              |                                    | I                                     |
| ۔<br>کلا  | abbrev       | viation         | s and ba               | asis of d   | escriptions                         |                  | CAR                     | U             | NU (INSW/AUT) PTY LTD  |                              |                                    |                                       |

|             |                      | ) C                      | arc                      | dno  |                                |                   |              |                |  |                            | TE                                 | ST PIT LOG SHEET                  |
|-------------|----------------------|--------------------------|--------------------------|--|--------------------------------|-------------------|--------------|----------------|--|----------------------------|------------------------------------|-----------------------------------|
| Cli<br>Pro  | ent:<br>ojec<br>cati | :<br>:t:<br>on:          | DWP<br>Detai<br>Kyee     | Australia<br>iled Site Invest<br>magh Infants \$ | igation and G<br>School, Kyeer | eotec<br>nagh,    | :hni<br>NS   | ical<br>SW     | Investigation<br>Job No: 5017190157  |                            | ł                                  | Hole No: TP07                     |
| Po          | siti                 | on: Se                   | e atta                   | ched plan  | · · · · <b>·</b> · · ·         |                   | _            |                | Angle from Horizontal: 90°   |                            | Surfac                             | e Elevation:                      |
| Ma          | chi                  | ne Typ                   | e: 10                    | tonne Excava                                     | tor                            |                   |              |                | Excavation Method:   |                            |                                    |                                   |
| Ex          | cav                  | ation I                  | Dimer                    | nsions:  |                                |                   |              |                |  |                            | Contra                             | ctor:                             |
| Da          | te E                 | xcava                    | ted: 1                   | 10/11/18   | <b>-</b> "                     |                   |              |                | Logged By: JG  |                            | Спеск                              | ed By:                            |
|             | xca                  | vation                   | -                        | Sampling &                                       | Testing                        | .                 |              |                | Material Description   | 1                          | 1                                  |                                   |
| Method      | Dociotoro            | Stability                | Water                    | Sample<br>Field Te                               | e or tagest O                  | Graphic           | Log          | Classification | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure | Moisture<br>Condition      | Consistency<br>Relative<br>Density | STRUCTURE<br>& Other Observations |
|             |                      |                          |                          | ES 0.10 m  |                                | ىد خلىد<br>خلەر خ | ىلىر خىل     |                | 0.10m Silty SAND: fine to medium grained, poorly   |                            |                                    | TOPSOIL                           |
|             |                      |                          |                          | ES 0.40 m  |                                | $\otimes$         | $\otimes$    |                | FILL: Silty SAND: fine to medium grained, uniform,   |                            |                                    | FILL                              |
|             |                      |                          |                          | 1P07_0.4   | -                              | $\otimes$         | $\otimes$    |                | brown  | D                          |                                    | 0.10 m: PID = 2.3 ppm             |
|             |                      |                          |                          | ES 0.60 m  |                                |                   | $\otimes$    |                | FILL: Gravelly SAND: fine to medium grained, gap   | -                          |                                    | 0.40 m: PID = 1.3 ppm             |
| Ä           |                      |                          |                          | TP07_0.6   | - 0.8                          | ) 💥               | $\bigotimes$ |                | graded, brown yellow, medium to coarse grained <u>0.60m_gravel</u>   | <u> </u>                   | L                                  |                                   |
|             |                      |                          |                          |  | -                              |                   |              |                | SAND: fine to medium grained, uniform, yellow<br>brown   |                            |                                    | MARINE                            |
|             |                      |                          |                          |  | -                              |                   |              |                |  | м                          | F                                  |                                   |
|             |                      |                          |                          |  | -                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | - 1.0                          |                   |              |                | 1.10m  |                            |                                    |                                   |
|             |                      |                          |                          |  | -                              |                   |              |                | TERMINATED AT 1.10 m<br>Target depth   |                            |                                    |                                   |
|             |                      |                          |                          |  | F                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | -                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | - 1.3                          | <b>'</b>          |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | -                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | -                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | t a                            |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | -2.0                           | '                 |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | -                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | -                              |                   |              |                |  |                            |                                    |                                   |
| 0<br>-<br>0 |                      |                          |                          |  | ł.                             |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | -2.5                           |                   |              |                |  |                            |                                    | · · · ·                           |
|             |                      |                          |                          |  | _                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | -                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | -                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | - 3.0                          |                   |              |                |  |                            |                                    |                                   |
| ,<br>,      |                      |                          |                          |  | Ē                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | ŀ                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | ŀ                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | -3.5                           | ;                 |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | ļ                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | ŀ                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | F                              |                   |              |                |  |                            |                                    |                                   |
| 0           |                      |                          |                          |  | -4.0                           | 2                 |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | Ę                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | ŀ                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | ŀ                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | -4.5                           | ;                 |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | ļ                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | ŀ                              |                   |              |                |  |                            |                                    |                                   |
|             |                      |                          |                          |  | F                              |                   |              |                |  |                            |                                    |                                   |
| м           | ETH                  | OD                       | 1                        | PE   | NETRATION                      |                   |              | F              | IELD TESTS SAMPLES   |                            | i                                  | SOIL CONSISTENCY                  |
| R E         | ×                    | Excavat<br>Ripper        | or buck                  | et VE<br>E                                       | Very Easy (No Resi<br>Easy     | stance)           |              | S<br>  н       | PI     - Standard Penetration Test     B     - Bu       P     - Hand/Pocket Penetrometer     D     - Dial  | ilk disturbe<br>sturbed sa | ed sample<br>imple                 | VS - Very Soft<br>S - Soft        |
| H.<br>P     | A<br>T               | Hand au<br>Push tul      | ger<br>e                 | F  | Firm<br>Hard                   |                   |              |                | CP - Dynamic Cone Penetrometer ES - Er<br>U - Th   | vironment<br>in wall tub   | al sample<br>e 'undistu            | F - Firm<br>Irbed' St - Stiff     |
| A           | ON<br>H              | Sonic dr                 | illing<br>ner            | VH   | Very Hard (Refusal)            |                   |              | P              | IC - Moisture Content MOISTURE   | E                          |                                    | VSt - Very Stiff<br>H - Hard      |
| P<br>A      | S<br>S               | Percuss<br>Short sp      | on san<br>iral aug       | npler WA   | Water Level of                 | on Date           |              | P<br>IN        | BT - Plate Bearing Test D - Dr<br>MP - Borehole Impression Test M M  | y<br>bist                  |                                    | RELATIVE DENSITY                  |
|             | D/V<br>D/T           | Solid flig<br>Solid flig | ht auge<br>ht auge       | er: V-Bit<br>er: TC-Bit                          | shown                          |                   |              | P              | ID - Photoionisation Detector W - W  | et<br>estic limit          |                                    | VL - Very Loose<br>L - Loose      |
| H<br>W      | FA<br>′B             | Hollow f                 | ight au<br>re drillir    | ger<br>ng –                                      | water outflow                  |                   |              | ^              | S - Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa)   | uid limit                  | ntent                              | MD - Medium Dense<br>D - Dense    |
| R           | ĸ                    | Rock rol                 | er                       |  |                                |                   |              |                | · · · · · · · · · · · · · · · · · · ·  |                            |                                    | VD - Very Dense                   |
| Reat        | efer to<br>brevia    | explanato                | y notes to<br>basis of o | for details of<br>descriptions                   |                                | CA                | ١R           | D١             | IO (NSW/ACT) PTY LTD   |                            |                                    |                                   |
|             |                      |                          |                          |  |                                |                   |              |                | ۱ <i>۱</i>   |                            |                                    |                                   |

|   | 1   |  | arc   | Ino  |  |                         |   |  |  | TE  | ST PIT LOG SHEET  |
|---|---|--|---|--|--|-------------------------|---|--|--|---|---|
| Clie<br>Pro   | ent:<br>ject:<br>atio   | ו<br>: ו<br>n: ו   | OWP<br>Detai<br>Kyee  | Australia<br>led Site Investigatio<br>magh Infants Schoo   | on and Ge<br>ol, Kveema  | otechn<br>agh. N        | ical<br>SW                                      | Investigation  |  | ŀ   | Hole No: TP08   |
| Pos   | sitio   | n: See   | atta  | ched plan  | .,,  | <b></b>                 |   | Angle from Horizontal: 90°   |  | Surfac                                      | e Elevation:  |
| Mad   | chin  | е Туре   | e: 10   | tonne Excavator  |  |                         |   | Excavation Method:   |  |   |   |
| Exc   | ava   | tion D   | imer  | sions:   |  |                         |   |  |  | Contra                                      | ctor:   |
| Dat   | e Ex  | cavat  | ed: 1   | 0/11/18  |  |                         |   | Logged By: JG  |  | Checke                                      | ed By:  |
|   | kcava<br>T  |  |   | Sampling & Testing   |  |                         | -   | Material Description   |  |   |   |
| Method  | Resistance  | Stability  | Water   | Sample or<br>Field Test  | Depth (m   | Graphic<br>Log          | Classification                                  | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure   | Moisture<br>Condition  | Consistency<br>Relative<br>Density          | STRUCTURE<br>& Other Observations   |
|   |   |  |   | ES 0.10 m<br>TP08 0.1  |  | لد علد علد<br>علد علد ع |   | 0.10m Silty SAND: fine to medium grained, gap graded,  |  |   | TOPSOIL<br>0.00 m: PID = 2.9ppm   |
|   |   |  |   | ES 0.40 m<br>TP08_0.4  |  |                         |   | FILL: SAND: fine to medium grained, uniform, brown   | D  |   | FILL 0.10 m: PID = 4.0ppm   |
| - EX -  |   |  |   |  | - 0.5  |                         |   | 0.40m<br>SAND: fine to medium grained, uniform, yellow<br>brown  | +  |   | MARINE  |
|   |   |  |   |  | -  |                         |   |  | м  | F   |   |
| V   |   | _  |   |  |  |                         |   | 0.90m  |  |   |   |
|   |   |  |   |  |  |                         |   | Target depth   |  |   |   |
| ato, Monitoring Loois   |   |  |   |  | -2.0<br>-<br>-<br>-<br>-<br>2.5  |                         |   |  |  |   |   |
| S RTA, Ph   |   |  |   |  | - 3.0  |                         |   |  |  |   |   |
| 0.000 Datgel AC   |   |  |   |  | -  |                         |   |  |  |   |   |
| 16:17 10.   |   |  |   |  | - 3.5  |                         |   |  |  |   | -   |
| 03/12/2018  |   |  |   |  | -  |                         |   |  |  |   |   |
| IngFile>> (   |   |  |   |  | - 4.0  |                         |   |  |  |   | -   |
| J < <draw< td=""><td></td><td></td><td></td><td></td><td>Ē</td><td></td><td></td><td></td><td></td><td></td><td></td></draw<> |   |  |   |  | Ē  |                         |   |  |  |   |   |
| LOGS.GF   |   |  |   |  | -<br>4.5   |                         |   |  |  |   | -   |
| IREHOLE   |   |  |   |  | -  |                         |   |  |  |   |   |
| EMAGH BC  |   |  |   |  | -  |                         |   |  |  |   |   |
| ME X HA PCONCORED KAE   | ETHOR<br>FRANCE<br>FRANCE<br>FON SCALE<br>FON SCALE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRANCE<br>FRAN | D<br>Excavato<br>Ripper<br>land aug<br>Push tube<br>Sonic dril<br>kir hamm<br>Percussic<br>Solid fligh<br>Solid fligh<br>Solid fligh<br>Iollow flig<br>Vashbor<br>Rock rolle | r bucke<br>er<br>er<br>on sam<br>al aug<br>t auge<br>t auge<br>ght aug<br>e drillin<br>er | et VE Very E<br>E Easy<br>F Firm<br>H Hard<br>VH Very H<br>WATER<br>*: V-Bit<br>r: TC-Bit<br>er<br>g | FION<br>Easy (No Resista<br>Hard (Refusal)<br>ater Level on<br>own<br>own<br>ater inflow<br>ater outflow | Date                    | F<br>S<br>F<br>D<br>F<br>N<br>F<br>II<br>F<br>V | IELD TESTS     SAMPLES       IPT - Standard Penetration Test     B - Bul       IP - Hand/Pocket Penetrometer     D - Dis       ICP - Dynamic Cone Penetrometer     B - Bul       ISP - Perth Sand Penetrometer     U - Thi       ICC - Moisture Content     MOISTURE       IPT - Plate Bearing Test     D - Dry       IPD - Photoionisation Detector     M - Mo       VS - Vane Shear; P=Peak,     R=Resdual (uncorrected kPa) | Ik disturbed sa<br>vironment<br>in wall tub<br>:<br>vist<br>et<br>sstic limit<br>uid limit<br>isture cor | d sample<br>mple<br>al sample<br>e 'undistu | SOIL CONSISTENCY<br>VS - Very Soft<br>S - Soft<br>F - Firm<br>VSt - Stiff<br>VSt - Very Stiff<br>H - Hard<br><b>RELATIVE DENSITY</b><br>VL - Very Loose<br>L - Loose<br>MD - Medium Dense<br>D - Dense<br>VD - Very Dense |
| Ret<br>Abb  | fer to e<br>previatio   | xplanatory   | notes f<br>asis of d  | or details of<br>escriptions   |  | CAR                     |   | NO (NSW/ACT) PTY LTD   |  |   |   |

| C  |  | ) C                    | arc                    | Ino                            |               |   |  |  |  |   | TE   | ST PIT LOG SHEET  |
|--|--|------------------------|------------------------|--------------------------------|---------------|---|--|--|--|---|--|---|
| Cli  | ent:<br>bject:   | :                      | DWP<br>Detai           | Australia<br>led Site Investic | ation and Ge  | otechn  | ical   | Investigation  |  |   | ŀ  | Hole No: TP09   |
| Lo   | atio   | n:                     | Kyee                   | magh Infants So                | hool, Kyeem   | agh, NS   | SW   | Job No: 5017190157   |  |   |  | Sheet: 1 of 1   |
| Po   | sitioi<br>chin   | 1: See<br>e Typ        | e atta<br>e: 10        | ched plan<br>tonne Excavato    | r             |   |  | Angle from Horizontal:<br>Excavation Method:   | : 90°  |   | Surfac                                       | e Elevation:  |
| Ex   | cava   | tion D                 | imer                   | isions:                        | •             |   |  |  |  | (   | Contra                                       | ctor:   |
| Dat  | te Ex  | cavat                  | ed: 1                  | 0/11/18                        |               |   |  | Logged By: JG  |  | (   | Checke                                       | ed By:  |
| E  | xcava  | ation                  |                        | Sampling & Te                  | esting        |   |  | Materia  | al Description   |   | 1  |   |
| Method   | Resistance   | Stability              | Water                  | Sample o<br>Field Tes          | Depth (m)     | Graphic<br>Log  | Classification                                 | SOIL TYPE, plasticity or particle chai<br>colour, secondary and minor comp<br>ROCK TYPE, grain size and type,<br>fabric & texture, strength, weath<br>defects and structure  | racteristic,<br>ponents<br>colour,<br>ering,   | Moisture<br>Condition   | Consistency<br>Relative<br>Density           | STRUCTURE<br>& Other Observations   |
|  |  |                        |                        | ES 0.30 m<br>TP09_0.3          | -             | لد علد علد<br>علد علد علد<br>لد علد علد<br>علد علد ع<br>لد علد علد<br>علد علد ع |  | Silty SAND: fine to medium grained,<br>brown yellow  | uniform,   | D   |  | TOPSOIL<br>0.00 m: PID = 3.3ppm   |
| EX-  |  |                        |                        | ES 0.80 m<br>TP09_0.8          | -<br>0.5<br>- |   |  | SAND: fine to medium grained, unifo  | orm, yellow  | — — —<br>М  | F  | MARINE  |
|  |  |                        |                        |                                |               | - 9449-644  |  | TERMINATED AT 0.80 m   |  |   |  |   |
| wingFiles> 03/12/2018 16:17 10.0.000 Datgel AGS RTA, Photo, Monitoring Tools   |  |                        |                        |                                | -1.0          |   |  | Target depth   |  |   |  |   |
| oJ < <draw< td=""><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td></draw<> |  |                        |                        |                                | -             |   |  |  |  |   |  | -   |
| JGS.G  |  |                        |                        |                                |               |   |  |  |  |   |  |   |
| OLE LC   |  |                        |                        |                                | - 4.5         |   |  |  |  |   |  | -   |
| OREH   |  |                        |                        |                                | F             |   |  |  |  |   |  |   |
| AGHB   |  |                        |                        |                                | Ę             |   |  |  |  |   |  |   |
| NO.GLB Log CARDNO NON-CORED KYEEN<br>고 종표 말 말 못 것 말 옷 넉 뀨 出 면 제  | WETHOD       PENETRATION         XE Excavator bucket       VE Very Easy (Nc         R Ripper       Hand auger         HA Hand auger       F Firm         SON Sonic drilling       H Hard         AH Air hammer       VH Very Hard (Re         VS Old flight auger: V-Bit       VH Very Hard (Re         AD/T Solid flight auger: C-Bit       Mater Infl         HFA Hollow flight auger: C-Bit       Water Le         VB Washbore drilling       water ou         R Rock roller       water ou |                        |                        |                                |               | I Date  | F<br>S<br>H<br>D<br>P<br>M<br>P<br>M<br>P<br>V | IELD TESTS         PT       -         Standard Penetration Test         IP       -         Hand/Pocket Penetrometer         ICP       -         Dynamic Cone Penetrometer         SP       -         Perth Sand Penetrometer         IC       -         Moisture Content         BT       -         Plate Bearing Test         IP       -         Borehole Impression Test         ID       -         Photoionisation Detector         S       -         Vane Shear; P=Peak,         R=Resdual (uncorrected kPa) | SAMPLES       B     - Bulk       D     Dist       ES     - Env       U     - Thir       MOISTURE       D     - Dry       M     - Mois       W     - Wet       PL     - Plas       LL     - Liqu       w     - Mois | t disturbe<br>urbed sa<br>ironment<br>wall tube<br>st<br>tic limit<br>id limit<br>sture con | I<br>mple<br>al sample<br>e 'undistu<br>tent | SOIL CONSISTENCY<br>VS - Very Soft<br>S - Soft<br>F - Firm<br>St - Stiff<br>VSt - Very Stiff<br>H - Hard<br>RELATIVE DENSITY<br>VL - Very Loose<br>L - Loose<br>MD - Medium Dense<br>D - Dense<br>VD - Very Dense |
| Re<br>ab   | efer to e<br>breviatio   | xplanator<br>ons and b | / notes f<br>asis of d | or details of<br>escriptions   |               | CAR   | D  | NO (NSW/ACT) PTY I   | LTD  |   |  |   |

|   |                        | ) Ci  | arc  | ano   |   |   |                         |  |   |   | TE   | ST PIT LOG SHEET   |
|---|------------------------|---|--|---|---|---|-------------------------|--|---|---|--|--|
| Clie<br>Pro   | ent:<br>ject:<br>atio  | ן<br>: 1<br>n: 1  | OWP<br>Detai<br>Kyee   | Australia<br>led Site Inv<br>magh Infan         | estigation ar<br>ts School. K   | nd Ge<br>yeema                                      | otechn<br>agh, NS       | ical<br>SW                                     | Investigation<br>Job No: 5017190157   |   | ŀ  | Hole No: TP10  |
| Pos   | sitior                 | n: See  | atta   | ched plan                                       |   | ,   | . <u>.</u>              |  | Angle from Horizontal: 90°  |   | Surfac   | e Elevation:   |
| Mad   | chine                  | е Туре  | e: 10  | tonne Exca                                      | avator  |   |                         |  | Excavation Method:  |   |  |  |
| Exc   | avat                   | tion D  | imer   | sions:  |   |   |                         |  |   |   | Contra   | ctor:  |
| Dat   |                        | cavat   | ed: 1  | 0/11/18   | a 9 Teeting   | 1   |                         |  | Logged By: JG   |   | Checke   | ed By:   |
| E   | kcava                  |   |  | Samplin   | g & Testing   |   |                         | _  |   |   |  |  |
| Method  | Resistance             | Stability   | Water  | San<br>Fiel                                     | nple or<br>Id Test  | Depth (m  | Graphic<br>Log          | Classification                                 | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure  | Moisture<br>Condition   | Consistency<br>Relative<br>Density                   | STRUCTURE<br>& Other Observations  |
|   |                        |   |  | ES 0.10 m<br>TP10 0.1                           |   |   | لد علد علد<br>علد علد ع |  | 0.10m Silty SAND: fine to medium grained, uniform,  | ,-  |  | TOPSOIL<br>0.00 m: PID = 2.3ppm  |
|   |                        |   |  | <br>ES 0.40 m<br>TP10_0.4                       |   | /<br> -<br> -                                       |                         |  | FILL: SAND: fine to medium grained, uniform, brown yellow   | D   |  | FILL<br>0.10 m: PID = 3.4ppm   |
| - EX -  |                        |   |  |   |   | - 0.5   |                         |  | 0.40m<br>SAND: fine to medium grained, uniform, yellow<br>brown   | +   | +  | MARINE   |
|   |                        |   |  |   |   | -   |                         |  |   | м   | F  |  |
| L.  |                        |   |  |   |   | [   |                         |  | 0.90m   |   |  |  |
| 18 16:17 10.0.000 Datget AGS KLA, Photo, Montomig Loois   |                        |   |  |   |   | - 1.0<br>   |                         |  | Target depth  |   |  |  |
| - 03/12/20  |                        |   |  |   |   | -   |                         |  |   |   |  |  |
| awinghile:  |                        |   |  |   |   | -4.0  |                         |  |   |   |  | -  |
| Ŭ,  |                        |   |  |   |   | F   |                         |  |   |   |  |  |
| 2.67  |                        |   |  |   |   | F   |                         |  |   |   |  |  |
| ELOG  |                        |   |  |   |   | -4.5  |                         |  |   |   |  | -  |
| EHOL  |                        |   |  |   |   | t   |                         |  |   |   |  |  |
| MAGH BUR  |                        |   |  |   |   | -   |                         |  |   |   |  |  |
| DIVOJGLER LOG CARDNO NON-CORED RYPEL<br>R H H D S S H D S | ETHOI                  | D<br>Excavato<br>Ripper<br>Push tub<br>Sonic dril<br>ir hamm<br>Percussic<br>Short spin<br>Solid fligh<br>Solid fligh<br>Iollow flig<br>Vashbor<br>Rock rolle | r bucke<br>er<br>ing<br>er<br>on sam<br>al aug<br>t auge<br>t auge<br>ght aug<br>e drillin<br>er | pler<br>er<br>r: V-Bit<br>r: TC-Bit<br>jer<br>g | PENETRATION<br>VE Very Easy (N<br>E Easy<br>F Firm<br>H Hard<br>VH Very Hard (R<br>WATER<br>WATER<br>Water L<br>Shown<br>water on | lo Resista<br>lefusal)<br>evel on<br>flow<br>utflow | Date                    | F<br>S<br>H<br>D<br>P<br>N<br>P<br>N<br>P<br>V | IELD TESTS       SAMPLES         PT - Standard Penetration Test       B - Bi         IP - Hand/Pocket Penetrometer       D - D         ICP - Dynamic Cone Penetrometer       U - TI         SP - Perth Sand Penetrometer       MOISTUR         IC - Moisture Content       D - D         BT - Plate Bearing Test       D - D         ID - Photoionisation Detector       W - W         S - Vane Shear; P=Peak,       L - Li         R=Resdual (uncorrected kPa)       W - M | Ik disturbed<br>isturbed sa<br>nvironment<br>nin wall tub<br>E<br>ry<br>oist<br>'et<br>astic limit<br>quid limit<br>oisture cor | ed sample<br>mple<br>al sample<br>e 'undistu<br>tent | SOIL CONSISTENCY       VS     - Very Soft       S     - Soft       F     - Firm       st     - Stiff       VSt     - Very Soft       H     - Hard       RELATIVE DENSITY       VL     - Very Loose       L     - Loose       MD     - Medium Dense       D     - Dense       VD     - Very Dense |
| Rei<br>abb  | ter to ex<br>previatio | xplanatory<br>ons and ba  | notes f<br>isis of d   | or details of<br>escriptions                    |   |   | CAR                     | D  | NO (NSW/ACT) PTY LTD  |   |  |  |

|  |                      |                  | arc                  | ino                                   |   |                        |   |  |  |   |   | TE   | ST PIT LOG SHEET  |
|--|----------------------|------------------|----------------------|---------------------------------------|---|------------------------|---|--|--|---|---|--|---|
| Clie<br>Proj<br>Loc  | nt:<br>ject:<br>atio | ו<br>ו<br>n: ו   | OWP<br>Detai<br>Kyee | Australia<br>led Site Ir<br>magh Infa | vestigation a   | ind Ge<br>(yeema       | otechn<br>agh, NS                             | ical<br>SW   | Investigation<br>Job No: 5017190157  |   |   | ŀ  | Hole No: TP11   |
| Pos<br>Mac   | itior                | n: See<br>e Type | atta                 | ched plan<br>tonne Ex                 | cavator   | <u> </u>               |   |  | Angle from Horizontal: 90<br>Excavation Method:  | )°  | 5   | Surfac   | e Elevation:  |
| Exc  | avat                 | ion D            | imer                 | sions:                                | Surutor   |                        |   |  |  |   | (   | Contra   | ctor:   |
| Date   | e Ex                 | cavat            | ed: 1                | 0/11/18                               |   |                        |   |  | Logged By: JG  |   | C   | Checke   | ed By:  |
| Ex   | cava                 | tion             |                      | Sampl                                 | ing & Testing   |                        |   |  | Material De  | escription  |   |  |   |
| Method   | Resistance           | Stability        | Water                | Si                                    | ample or<br>ield Test   | Depth (m)              | Graphic<br>Log                                | Classification   | SOIL TYPE, plasticity or particle character<br>colour, secondary and minor componer<br>ROCK TYPE, grain size and type, colo<br>fabric & texture, strength, weathering<br>defects and structure   | ristic,<br>nts<br>ur,<br>J,   | Moisture<br>Condition                     | Consistency<br>Relative<br>Density   | STRUCTURE<br>& Other Observations   |
|  |                      |                  |                      | ES 0.20 m<br>TP11_0.2                 |   | -                      | ليد عليد عليد<br>عليد عليد ع<br>ليد عليد عليد |  | Silty SAND: fine to medium grained, unifo  | orm,  | D   |  | TOPSOIL<br>0.00 m: PID = 2.0ppm   |
| EX   |                      |                  |                      |                                       |   |                        |   |  | SAND: fine to medium grained, uniform, y<br>brown  | yellow  | м   |  | MARINE  |
|  |                      |                  |                      | ES 1.20 m                             |   | - 1.0                  |   |  |  |   |   |  |   |
| V  |                      | _                |                      | TP11_1.2                              |   | -[                     |   |  | 1.20m  |   |   |  |   |
|  |                      |                  |                      |                                       |   | ŀ                      |   |  | TERMINATED AT 1.20 m<br>Target depth   |   |   |  |   |
|  |                      |                  |                      |                                       |   | - 1.5<br>-             |   |  |  |   |   |  |   |
|  |                      |                  |                      |                                       |   | -                      |   |  |  |   |   |  |   |
|  |                      |                  |                      |                                       |   | - 2.0                  |   |  |  |   |   |  |   |
|  |                      |                  |                      |                                       |   |                        |   |  |  |   |   |  |   |
|  |                      |                  |                      |                                       |   | -<br>2.5               |   |  |  |   |   |  |   |
|  |                      |                  |                      |                                       |   |                        |   |  |  |   |   |  |   |
|  |                      |                  |                      |                                       |   | - 3.0                  |   |  |  |   |   |  |   |
|  |                      |                  |                      |                                       |   | -                      |   |  |  |   |   |  |   |
|  |                      |                  |                      |                                       |   | -3.5                   |   |  |  |   |   |  |   |
|  |                      |                  |                      |                                       |   | -                      |   |  |  |   |   |  |   |
|  |                      |                  |                      |                                       |   |                        |   |  |  |   |   |  |   |
|  |                      |                  |                      |                                       |   | -                      |   |  |  |   |   |  |   |
|  |                      |                  |                      |                                       |   | -                      |   |  |  |   |   |  |   |
|  |                      |                  |                      |                                       |   | -4.5<br>-              |   |  |  |   |   |  |   |
|  |                      |                  |                      |                                       |   |                        |   |  |  |   |   |  |   |
| ME   | THO                  | <u>ר</u>         |                      | I                                     | PENETRATION   | <u> </u>               |   | F  | IELD TESTS S   | SAMPLES   |   | <u> </u>   | SOIL CONSISTENCY  |
| Incur         PENETRATION           EX         Excavator bucket         VE         Very Easy (No Resist           R         Ripper         E         Easy           HA         Hand auger         F         Firm           PT         Push tube         H         Hard           SON         Sonic drilling         VH         Very Hard (Refusal)           AH         Air hammer         PS         Percussion sampler |                      |                  |                      |                                       | VE Very Easy (<br>E Easy<br>F Firm<br>H Hard<br>VH Very Hard (<br>WATER | No Resista<br>Refusal) | ance)   | S H D P M P  | PT     - Standard Penetration Test     B       P     - Hand/Pocket Penetrometer     D       CP     - Dynamic Cone Penetrometer     D       SP     - Perth Sand Penetrometer     D       C     - Moisture Content     N       BT     - Plate Bearing Test     D | B - Bulk di<br>D - Disturt<br>ES - Enviro<br>J - Thin w<br>MOISTURE | isturbe<br>bed sar<br>nmenta<br>vall tube | d sample<br>mple<br>al sample<br>e 'undistu  | VS - Very Soft<br>S - Soft<br>F - Firm<br>VSt - Stiff<br>VSt - Very Stiff<br>H - Hard |
| AS Short spiral auger<br>AD/V Solid flight auger: V-Bit<br>AD/T Solid flight auger: TC-Bit<br>HFA Hollow flight auger: WB Washbore drilling<br>RR Rock roller  |                      |                  |                      |                                       | Water<br>shown<br>water i<br>water o                                    | Date                   | P<br>P<br>V                                   | AP     -     Borehole Impression Test     D       MP     -     Borehole Impression Test     M       ID     -     Photoionisation Detector     V       S     -     Vane Shear, P=Peak,<br>R=Resdual (uncorrected kPa)     P | D - Dry<br>M - Moist<br>W - Wet<br>PL - Plastic<br>LL - Liquid<br>w - Moistu   | : limit<br>limit<br>ire con   | tent                                      | RELATIVE DENSITY         VL       - Very Loose         L       - Loose         MD       - Medium Dense         D       - Dense         VD       - Very Dense |   |
| Ref<br>abb   | er to ex<br>reviatio | planatory        | notes f<br>asis of d | or details of<br>escriptions          |   |                        | CAR   |  | NO (NSW/ACT) PTY LT  | D   |   |  |   |
|   | $\mathbf{D}$   | C         | arc                  | Ino                          |                       |   |                |               |  |   |   | TES  | ST PIT LOG SHEET  |
|---|--|-----------|----------------------|------------------------------|-----------------------|---|----------------|---------------|--|---|---|--|---|
| Clie  | ent:<br>ject:  | <br> <br> | OWP<br>Detai         | Australia<br>led Site Ir     | nvestigation a        | ind Ge  | otechn         | ical          | I Investigation  |   |   | F  | lole No: TP12   |
| Pos   | sition   | : See     | atta                 | ched plar                    |                       | yeem  | agn, ne        |               | Angle from Horizontal: 9   | 0°  |   | Surface  | Elevation:  |
| Ma  | chine  | тур       | e: 10                | tonne Ex                     | cavator               |   |                |               | Excavation Method:   |   |   |  |   |
| Exc   | avat   | ion D     | imer                 | sions:                       |                       |   |                |               |  |   | (   | Contrac  | ctor:   |
| Dat   |  | tion      | ed: 1                | 0/11/18                      | ling & Tosting        |   |                |               | Logged By: JG  | oscription  | (   | леске  | d By:   |
|   |  |           |                      | Samp                         | ing a resurg          | -<br>-<br>-   |                | c             |  | escription  |   |  |   |
| Method  | Resistance   | Stability | Water                | S                            | ample or<br>ield Test | Depth (r  | Graphic<br>Log | Classificatio | SOIL TYPE, plasticity or particle characte<br>colour, secondary and minor compone<br>ROCK TYPE, grain size and type, colo<br>fabric & texture, strength, weathering<br>defects and structure   | eristic,<br>ents<br>our,<br>g,  | Moisture<br>Condition   | Consistency<br>Relative<br>Density                   | STRUCTURE<br>& Other Observations   |
|   |  |           |                      | ES 0.20 m<br>TP12_0.2, 0     | QA100, QA200          | -   |                |               | FILL: SAND: fine to medium grained, uni<br>brown yellow<br>0.20m   | iform,  |   |  | FILL<br>0.00 m: PID = 2.2ppm -  |
| EX  |  |           |                      | ES 1.00 m<br>TP12_1.0        |                       | - 0.5   |                | SP            | SAND: fine to medium grained, uniform, brown   | yellow  | D   | L  | MARINE  |
|   |  |           |                      | TP12_1.0                     | PENETRATION           | -<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>- |                |               | TERMINATED AT 1.00 m<br>Target depth   | SAMPLES   |   |  | SOIL CONSISTENCY  |
| EÀ<br>R<br>H/<br>PT<br>SC<br>AF<br>PS<br>AS<br>AL<br>HF<br>WR<br>RF | EX       Excavator bucket         R       Ripper         HA       Hand auger         PT       Push tube         SON       Sonic fulling         AH       Air hammer         PS       Percussion sampler         AD/V       Solid flight auger: V-Bit         AD/T       Solid flight auger: V-Bit         HFA       Hollow flight auger: V-Bit         HFA       Hollow flight auger: Greet         RR       Rock roller |           |                      |                              |                       |   |                |               | SPT       Standard Penetration Test         HP       Hand/Pocket Penetrometer         DCP       Dynamic Cone Penetrometer         PSP       Perth Sand Penetrometer         MC       Moisture Content         PBT       Plate Bearing Test         IMP       Borehole Impression Test         PID       Photoionisation Detector         VS       Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa) | B - Bulk<br>D - Distu<br>ES - Envir<br>U - Thin<br>MOISTURE<br>D - Dry<br>M - Mois<br>W - Wet<br>PL - Plast<br>LL - Liqui<br>w - Mois | disturbe<br>irbed sai<br>ronmenta<br>wall tube<br>t<br>t<br>tic limit<br>ture con | d sample<br>mple<br>al sample<br>e 'undistur<br>tent | bed'<br>VS - Very Soft<br>S - Soft<br>F - Firm<br>VSt - Stiff<br>VSt - Very Stiff<br>H - Hard<br><b>RELATIVE DENSITY</b><br>VL - Very Loose<br>L - Loose<br>MD - Medium Dense<br>D - Dense<br>VD - Very Dense |
| Re<br>abl   | fer to ex<br>previatio   | planatory | notes f<br>asis of d | or details of<br>escriptions | 1                     |   | CAR            |               | NO (NSW/ACT) PTY LT  | D   |   |  | 1   |

|   |   | ) C  | arc  | lno'  |                               |                         |                                 |   |  | TE  | ST PIT LOG SHEET   |
|---|---|--|--|---|-------------------------------|-------------------------|---------------------------------|---|--|---|--|
| Cli   | ent:  |  | DWP  | Australia                                       | and Go                        | otechn                  | ical                            | Investigation   |  | ŀ   | Hole No: TP13  |
| Lo  | catio   | on:  | Kyee   | magh Infants School, I                          | Kyeema                        | agh, NS                 | SW                              | Job No: 5017190157  |  |   | Sheet: 1 of 1  |
| Po  | sitio<br>ohin                                   | n: See   | atta   | ched plan                                       |                               |                         |                                 | Angle from Horizontal: 90°  |  | Surfac  | e Elevation:   |
| Ex  | cava  | tion D   | imer   | isions:   |                               |                         |                                 | Excavation method.  |  | Contra  | ctor:  |
| Da  | te Ex   | xcavat   | ed: 1  | 0/11/18   |                               |                         |                                 | Logged By: JG   |  | Checke  | ed By:   |
| E   | xcava   | ation  |  | Sampling & Testing                              |                               |                         |                                 | Material Description  |  |   |  |
| Method  | Resistance                                      | Stability  | Water  | Sample or<br>Field Test                         | Depth (m)                     | Graphic<br>Log          | Classification                  | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure  | Moisture<br>Condition                              | Consistency<br>Relative<br>Density            | STRUCTURE<br>& Other Observations  |
|   |   |  |  | ES 0.10 m<br>TP13_0.1                           |                               | لد علد علد<br>علد علد ع |                                 | 0.10m Silty SAND: fine to medium grained, poorly graded, brown grey, trace fine to medium grained   |  |   | TOPSOIL<br>0.00 m: PID = 0.6 ppm, bricks,  |
|   |   |  |  | ES 0.40 m<br>TP13_0.4                           | -                             |                         |                                 | Gravel/<br>FILL: SAND: fine to medium grained, gap graded,<br>brown, trace fine to medium grained gravel  | D  |   | Concrete chuncks, plastic sheeting<br>FILL<br>0.10 m: PID = 0.8 ppm, large<br>concrete chunks present  |
| EX-   |   |  |  |   | 0.5<br>-<br>-                 |                         | SP                              | SAND: fine to medium grained, uniform, yellow brown   | м  | MD  | MARINE   |
|   |   |  |  |   | - 1.0                         | <u></u>                 |                                 | TERMINATED AT 0.90 m<br>Target depth  |  |   | -  |
|   |   |  |  |   | -                             |                         |                                 |   |  |   |  |
|   |   |  |  |   | -<br>1.5                      |                         |                                 |   |  |   | -  |
|   |   |  |  |   | -                             |                         |                                 |   |  |   |  |
|   |   |  |  |   | - 2.0                         |                         |                                 |   |  |   | -  |
| slo   |   |  |  |   | -                             |                         |                                 |   |  |   |  |
| nitoring Too  |   |  |  |   | - 2.5                         |                         |                                 |   |  |   | -  |
| , Photo, Mo   |   |  |  |   | -                             |                         |                                 |   |  |   |  |
| el AGS RTA  |   |  |  |   | - 3.0                         |                         |                                 |   |  |   | -  |
| 0.000 Datg  |   |  |  |   | -                             |                         |                                 |   |  |   |  |
| 3 16:17 10.0  |   |  |  |   | - 3.5                         |                         |                                 |   |  |   | -  |
| 03/12/2016  |   |  |  |   | -                             |                         |                                 |   |  |   |  |
| wingFile>>  |   |  |  |   | - 4.0                         |                         |                                 |   |  |   | -  |
| GPJ < <dra< td=""><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td></dra<> |   |  |  |   | -                             |                         |                                 |   |  |   |  |
| DLE LOGS  |   |  |  |   | -<br>4.5<br>-                 |                         |                                 |   |  |   | -  |
| GH BOREH  |   |  |  |   | -                             |                         |                                 |   |  |   |  |
| EEMAK   |   |  |  | DENETDATION                                     |                               |                         |                                 |   |  |   |  |
|   | ETHO<br>K E<br>A F<br>T F<br>ON S<br>H /<br>S F | ש<br>Excavato<br>Ripper<br>Hand aug<br>Push tub<br>Sonic dril<br>Air hamm<br>Percussio<br>Short ar | or buck<br>ger<br>e<br>lling<br>ner<br>on sam                | pler WATER                                      | N (No Resista<br>(Refusal)    | ince)                   | F<br>S<br>F<br>C<br>P<br>N<br>P | IELD IESIS     SAMPLES       SPT - Standard Penetration Test     B - Bul       IP - Hand/Pocket Penetrometer     D - Dis       CP - Dynamic Cone Penetrometer     ES - En       VSP - Perth Sand Penetrometer     U - Thi       MOISTURE     MOISTURE       PT - Plate Bearing Test     D - Dry | k disturbe<br>turbed sa<br>rironment<br>n wall tub | ed sample<br>Imple<br>al sample<br>e 'undistu | SOIL CONSISTENCY           VS         - Very Soft           S         - Soft           F         - Firm           strbed'         St           VS         - Very Stiff           VS         - Very Stiff           H         - Hard           RELATIVE DENSITY |
| IO.GLB Log CAR.<br>A S H P P 2  | 5 5/V 5<br>D/V 5<br>D/T 5<br>FA F<br>B 1<br>R F | Solid fligh<br>Solid fligh<br>Solid fligh<br>Hollow fli<br>Washbor<br>Rock roll                    | nai auge<br>nt auge<br>nt auge<br>ght aug<br>e drillir<br>er | r: V-Bit<br>r: TC-Bit<br>ger<br>g<br>g<br>water | Level on<br>inflow<br>outflow | Date                    | II<br>F<br>V                    | VIP - Borehole Impression Test       M - Moi         VID - Photoionisation Detector       W - We         'S - Vane Shear; P=Peak,       PL - Pia         R=Resdual (uncorrected kPa)       W - Moi  | st<br>t<br>stic limit<br>uid limit<br>sture cor    | ntent   | VL - Very Loose<br>L - Loose<br>MD - Medium Dense<br>D - Dense<br>VD - Very Dense  |
|   | efer to e<br>breviati                           | explanator<br>ions and b   | y notes f<br>asis of c                                       | or details of<br>escriptions                    |                               | CAR                     | D                               | NO (NSW/ACT) PTY LTD  |  |   |  |

| C          | D                      | C                     | arc                      | Ino                           |                           |            |                 |               |   |   |                           | ΤE                                 | ST PIT LOG SHEET                  |
|------------|------------------------|-----------------------|--------------------------|-------------------------------|---------------------------|------------|-----------------|---------------|---|---|---------------------------|------------------------------------|-----------------------------------|
| Clie       | nt:<br>iect:           | l                     | DWP<br>Detai             | Australia<br>led Site Inve    | estigation a              | nd Ge      | otechn          | ical          | Investigation   |   |                           | ŀ                                  | Hole No: TP14                     |
| Loc        | ation                  | ı: İ                  | <pre>Kyee</pre>          | magh Infant                   | s School, K               | yeema      | agh, NS         | SW            | Job No: 5017190157  |   |                           |                                    | Sheet: 1 of                       |
| Pos        | ition                  | : See                 | atta                     | ched plan                     |                           |            |                 |               | Angle from Horizontal   | : 90°   | ;                         | Surfac                             | e Elevation:                      |
| Mac        | hine:<br>avati         | Type<br>on D          | 9: 10<br>imor            | tonne Exca                    | vator                     |            |                 |               | Excavation Method:  |   |                           | Contra                             | octor                             |
| Date       | avau<br>e Exc          | avat                  | ed: 1                    | 0/11/18                       |                           |            |                 |               | Logged By: JG   |   |                           | Check                              | ed Bv:                            |
| Ex         | cavat                  | ion                   |                          | Sampling                      | & Testing                 |            |                 |               | Materia   | al Description                                  |                           |                                    |                                   |
|            | n.                     |                       | 1                        |                               |                           | Ê          |                 | E             |   |   |                           |                                    |                                   |
| Method     | Resistance             | Stability             | Water                    | Sam<br>Field                  | iple or<br>d Test         | Depth (    | Graphic<br>Log  | Classificatio | SOIL 1YPE, plasticity or particle cha<br>colour, secondary and minor com<br>ROCK TYPE, grain size and type,<br>fabric & texture, strength, weath<br>defects and structure | racteristic,<br>ponents<br>, colour,<br>iering, | Moisture<br>Condition     | Consistency<br>Relative<br>Density | STRUCTURE<br>& Other Observations |
|            |                        |                       |                          | ES 0.10 m<br>TP14 0.1         |                           |            |                 |               | 0.10m FILL: Silty SAND: fine to medium gr   | ained, gap                                      | D                         |                                    | FILL<br>0.00 m: PID = 0.6 ppm     |
|            |                        |                       |                          |                               |                           | -          |                 |               | SAND: fine to medium grained, unif  | <br>orm, grey                                   |                           |                                    | MARINE<br>0.10 m: PID = 0.7 ppm   |
| - X        |                        |                       |                          |                               |                           | F          |                 |               | yenow   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | -0.5       |                 | 5P            |   |   | M                         |                                    |                                   |
|            |                        |                       |                          | ES 0.70 m<br>TP14 0.7         |                           | F          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | +          | <u>er gjerg</u> |               | TERMINATED AT 0.70 m  |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | [          |                 |               | Target depth  |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | - 1.0      |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | ł          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | t          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | -          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | - 1.5      |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | t          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | [          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | F          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | -2.0       |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | Ĺ          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | -          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | ł          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | - 2.5      |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | -          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | ŀ          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           |            |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | - 3.0      |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | -          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | ł          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | -35        |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | -          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | ŀ          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | Ĺ          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | -4.0       |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | ŀ          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | Ĺ          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | ŀ          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | -4.5       |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | t          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | ŀ          |                 |               |   |   |                           |                                    |                                   |
|            |                        |                       |                          |                               |                           | ł          |                 |               |   |   |                           |                                    |                                   |
| ME         | THOD                   | I                     | I                        | <u> </u>                      | PENETRATION               |            | 1               | F             | IELD TESTS  | SAMPLES   | 1                         | 1                                  | SOIL CONSISTENCY                  |
| EX<br>R    | Ex<br>Rij              | cavato                | r buck                   | et                            | VE Very Easy (I<br>E Easy | No Resista | nce)            | S<br>  H      | PT - Standard Penetration Test<br>IP - Hand/Pocket Penetrometer   | B - Bu<br>D - Dis                               | lk disturbe<br>sturbed sa | ed sample<br>imple                 | e VS - Very Soft<br>S - Soft      |
| HA<br>PT   | Ha<br>Pu               | and aug<br>Ish tub    | jer<br>e                 |                               | F Firm<br>H Hard          |            |                 |               | ICP - Dynamic Cone Penetrometer   | ES - En<br>U - Th                               | vironment<br>in wall tub  | al sample<br>e 'undistu            | e F - Firm<br>urbed' St - Stiff   |
| SO<br>AH   | N So<br>Air            | nic dril<br>hamm      | ling<br>ier              |                               | VH Very Hard (I           | Refusal)   |                 |               | IC - Moisture Content   | MOISTURE  | •                         |                                    | VSt - Very Stiff<br>H - Hard      |
| PS<br>AS   | Pe<br>Sh               | ort spi               | on sam<br>ral aug        | ipier<br>er                   | Water                     | Level on   | Date            | P<br>IN       | BT - Plate Bearing Test<br>MP - Borehole Impression Test  | D - Dr<br>M - Mo                                | y<br>bist                 |                                    |                                   |
| AD<br>AD   | /V So<br>/T So         | olid fligh            | it auge<br>it auge       | r: V-Bit<br>r: TC-Bit         | shown                     | nflow      |                 | P             | ID - Photoionisation Detector   | W - We<br>PL - Pla                              | et<br>astic limit         |                                    | VL - Very Loose<br>L - Loose      |
| WE         | HC<br>B<br>Wa          | ashbor                | yncau<br>e drillir<br>er | jg                            | - water o                 | utflow     |                 |               | R=Resdual (uncorrected kPa)   | LL - Liq<br>w - Mo                              | juid limit<br>bisture cor | ntent                              | D - Dense<br>VD - Verv Dense      |
|            |                        |                       |                          |                               |                           |            |                 | _             |   | <u> </u>  |                           |                                    | very Delise                       |
| Ref<br>abb | er to exp<br>reviatior | planatory<br>ns and b | notes f<br>asis of c     | or details of<br>lescriptions |                           |            | CAR             | D             | NO (NSW/ACT) PTY  | LTD   |                           |                                    |                                   |

|  | $\square$   |  | arc  | Ino   |   |                              |                         |               |  |  | TE   | ST PIT LOG SHEET   |
|--|---|--|--|---|---|------------------------------|-------------------------|---------------|--|--|--|--|
| Clie<br>Pro  | ent:<br>ject:<br>atio   | 1<br> <br>n:   | OWP<br>Detai<br>Kyee   | Australia<br>led Site li<br>magh Infa           | nvestigation a                                  | nd Ge                        | otechn<br>agh. NS       | ical<br>SW    | Investigation  |  | ł  | Hole No: TP15  |
| Pos  | ition   | n: See   | atta   | ched plar                                       | 1   | yoom                         |                         |               | Angle from Horizontal: 90°   | :  | Surfac                                       | e Elevation:   |
| Мас  | chine   | э Тур  | e: 10  | tonne Ex  | cavator   |                              |                         |               | Excavation Method:   |  |  |  |
| Exc  | avat  | ion D  | imer   | sions:  |   |                              |                         |               | Loggod Byr JG  |  | Contra<br>Chock                              | ctor:  |
| Dal<br>F1  |   | tion   | eu. I  | Samp  | lina & Testina                                  |                              |                         |               | Logged By. JG<br>Material Description  | าท   | CHECK  | ей бу.   |
|  |   |  |  | Camp  |   | Ê                            |                         | ç             |  |  |  |  |
| Method   | Resistance  | Stability  | Water  | S   | ample or<br>ïeld Test                           | Depth (r                     | Graphic<br>Log          | Classificatio | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure                   | Moisture<br>Condition  | Consistency<br>Relative<br>Density           | STRUCTURE<br>& Other Observations  |
| •  |   |  |  | ES 0.10 m<br>TP15 0.1                           |   | 7                            | لد علد علد<br>علد علد ع |               | 0.10m SAND: fine to medium grained, gap graded, grey   | <u></u>  |  | TOPSOIL<br>0.00 m: PID = 0.4ppm  |
| EX   |   |  |  | <br>ES 0.60 m<br>TP15_0.6                       |   | <br><br>0.5                  |                         |               | FILL: SAND: fine to medium grained, poorly<br>graded, grey brown   |  |  | FILL   |
|  |   |  |  |   |   | -<br>-<br>-<br>- 1.0         |                         | SP            | SAND: fine to medium grained, uniform, yellow brown  | - — м  | MD   |  |
| _  |   |  |  |   |   |                              | <u>- NAN 2667</u>       |               | 1.10m<br>TERMINATED AT 1.10 m<br>Tarret denth  |  |  |  |
|  |   |  |  |   |   | ŀ                            |                         |               | , algor dopar  |  |  |  |
|  |   |  |  |   |   | - 1.5                        |                         |               |  |  |  |  |
|  |   |  |  |   |   | _                            |                         |               |  |  |  |  |
|  |   |  |  |   |   | -                            |                         |               |  |  |  |  |
|  |   |  |  |   |   | - 2.0                        |                         |               |  |  |  |  |
|  |   |  |  |   |   | F                            |                         |               |  |  |  |  |
|  |   |  |  |   |   | -                            |                         |               |  |  |  |  |
|  |   |  |  |   |   | - 25                         |                         |               |  |  |  |  |
|  |   |  |  |   |   | -                            |                         |               |  |  |  |  |
|  |   |  |  |   |   |                              |                         |               |  |  |  |  |
|  |   |  |  |   |   | -                            |                         |               |  |  |  |  |
|  |   |  |  |   |   | - 3.0                        |                         |               |  |  |  |  |
|  |   |  |  |   |   | L                            |                         |               |  |  |  |  |
|  |   |  |  |   |   | -                            |                         |               |  |  |  |  |
|  |   |  |  |   |   | - 3.5                        |                         |               |  |  |  |  |
|  |   |  |  |   |   | F                            |                         |               |  |  |  |  |
|  |   |  |  |   |   | F                            |                         |               |  |  |  |  |
|  |   |  |  |   |   | -4.0                         |                         |               |  |  |  |  |
|  |   |  |  |   |   | F                            |                         |               |  |  |  |  |
|  |   |  |  |   |   | ļ                            |                         |               |  |  |  |  |
|  |   |  |  |   |   | -4.5                         |                         |               |  |  |  |  |
|  |   |  |  |   |   | ļ                            |                         |               |  |  |  |  |
|  |   |  |  |   |   | -                            |                         |               |  |  |  |  |
| WETHOD         PENETRATION         FIELD TESTS         SAMPLE3           EX         Excavator bucket         VE         Very Easy (No Resistance)         SPT - Standard Penetration Test         B         B         B         B         C         C         D         C< |   |  |  |   |   |                              |                         |               |  | ES<br>Bulk disturbe<br>Disturbed sa<br>Environment<br>Thin wall tub  | ed sample<br>mple<br>al sample<br>e 'undistu | SOIL CONSISTENCY           v         VS         - Very Soft           s         - Soft         -           arbed'         F         - Firm           vst         - Stiff         -           VSt         - Very Sift         - |
| AC<br>AS<br>AD<br>AD<br>HF<br>WI<br>RF   | /V Si<br>//V Si<br>//T Si<br>//T Si<br>//T Si<br>//T Si<br>//T Si<br>//T Si<br>//T Si<br>//T Si | ercussion<br>hort spin<br>olid fligh<br>olid fligh<br>ollow fligh<br>ashbor<br>ock rolle | on sam<br>al aug<br>t auge<br>t auge<br>t auge<br>ght aug<br>e drillir<br>er | pler<br>er<br>r: V-Bit<br>r: TC-Bit<br>ger<br>9 | WATER<br>Water<br>shown<br>water in<br>water of | Level on<br>nflow<br>putflow | Date                    |               | Montatile Contrent     Montatile       BT - Plate Bearing Test     D       MP - Borehole Impression Test     M       ID - Photoionisation Detector     W       S - Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa)     LL | Dry<br>Moist<br>Wet<br>Plastic limit<br>Liquid limit<br>Moisture cor | itent  | RELATIVE DENSITY       VL     - Very Loose       L     - Loose       MD     - Medium Dense       D     - Dense       VD     - Very Dense   |
| Ret  | er to ex<br>reviatio  | planatory  | notes f<br>asis of d   | or details of<br>escriptions                    |   |                              | CAR                     | D             | IO (NSW/ACT) PTY LTD   |  |  |  |

| C   | D  | C  | arc   | Ino                                      |  |   |                         |                                 |   |  | TEST P  | IT LOG SHEET  |
|---|--|--|---|--|--|---|-------------------------|---------------------------------|---|--|---|---|
| Clie<br>Proj<br>Loc   | nt:<br>ject:<br>atior  | ן<br>ו<br>ו: ו   | OWP<br>Detai<br>Kyee  | Australia<br>led Site In<br>magh Infai   | vestigation a<br>nts School, K   | nd Geo  | otechn<br>agh, N        | ical<br>SW                      | Investigation<br>Job No: 5017190157   |  | Hole  | No: TP16  |
| Pos   | ition  | : See  | atta  | ched plan                                |  | ,   | 0 /                     |                                 | Angle from Horizontal: 90   | )°   | Surface Eleva                                       | ation:  |
| Mac   | hine   | Туре   | e: 10   | tonne Exc                                | avator   |   |                         |                                 | Excavation Method:  |  |   |   |
| Exc   | avat   | on D   | imen  | sions:                                   |  |   |                         |                                 |   |  | Contractor:   |   |
| Date  | e Exe  | cavat  | ed: 1   | 0/11/18                                  |  |   |                         |                                 | Logged By: JG   |  | Checked By:   |   |
| Ex  | cavat  | ion  |   | Samplii                                  | ng & Testing   |   |                         |                                 | Material De   | escription   |   |   |
| Method  | Resistance   | Stability  | Water   | Sa<br>Fie                                | imple or<br>eld Test   | Depth (m)   | Graphic<br>Log          | Classification                  | SOIL TYPE, plasticity or particle character<br>colour, secondary and minor component<br>ROCK TYPE, grain size and type, color<br>fabric & texture, strength, weathering<br>defects and structure  | ristic,<br>nts ut,<br>ur, iso<br>g, WO   | Consistency<br>Relative<br>Density                  | STRUCTURE<br>& Other Observations   |
|   |  |  |   | ES 0.10 m                                |  |   | ند علد علد<br>عاد عاد ع | -                               | 0.10m Silty SAND: fine to medium grained, poor  | rly D  | TOPSO   |   |
|   |  |  |   | 1P16_0.1 , G                             | QA 300, QA 400   | 1   |                         |                                 | graded, grey<br>SAND: fine to medium grained, poorly gra  |  |   | PID = 0.6ppm  |
| EX  |  |  |   | ES 0.80 m                                |  | -<br>-<br>-0.5<br>-   |                         | SP                              | yellow grey   | M  | 0.10 m:<br>L  | PID = 0.3ppm<br>-<br>-<br>-   |
| <b>_ *</b>  |  |  |   | TP16_0.8                                 |  |   | 1996                    |                                 |   |  |   |   |
|   |  |  |   |  |  | - 1.0<br>- 1.0<br>- 1.5<br>- 2.0<br>- 2.5<br>- 3.0<br>- 3.5<br> |                         |                                 | TERMINATED AT 0.80 m<br>Target depth  |  |   |   |
| ME<br>EX<br>R<br>HA<br>PT<br>SO<br>AH<br>PS<br>AD<br>HF<br>WE<br>RR | THOD<br>Ri<br>Hi<br>Pu<br>N So<br>Ai<br>Pe<br>Si<br>V So<br>V So<br>V So<br>V So<br>V So<br>Ri<br>Ri<br>Ri<br>Ri<br>Ri<br>Ri<br>Ri<br>Ri<br>Ri<br>Ri<br>Ri<br>Ri<br>Ri | L<br>ccavato<br>pper<br>and aug<br>ish tub-<br>nic dril<br>r hamm<br>ercussic<br>ort spii<br>olid fligh<br>olid fligh<br>olid fligh<br>ollow flig<br>ashbor<br>ock rolle | r bucke<br>er<br>er<br>on sam<br>al auge<br>t auge<br>t auge<br>d auge<br>d auge<br>d auge<br>d auge<br>a drillin<br>er | pler<br>er<br>r: V-Bit<br>r: TC-Bit<br>g | PENETRATION<br>VE Very Easy (N<br>E Easy<br>F Firm<br>H Hard<br>VH Very Hard (F<br>WATER<br>WATER<br>Water I<br>shown<br>Water o | I<br>No Resista<br>Refusal)<br>Level on<br>Inflow<br>utflow     | I<br>nce)<br>Date       | F<br>S<br>F<br>F<br>N<br>F<br>V | IELD TESTS     S       IPT - Standard Penetration Test     B       IP - Hand/Pocket Penetrometer     D       ICP - Dynamic Cone Penetrometer     U       ISP - Perth Sand Penetrometer     U       ICP - Moisture Content     N       IP - Plate Bearing Test     D       IP - Photoionisation Detector     V       ID - Photoionisation Detector     V       'S - Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa)     N | ASAMPLES<br>3 - Bulk disturbed<br>5 - Disturbed sa<br>5 - Environment<br>J - Thin wall tub<br>MOISTURE<br>0 - Dry<br>4 - Moist<br>V - Vet<br>V - Plastic limit<br>L - Liquid limit<br>v - Moisture cor | I I<br>mple<br>al sample<br>e 'undisturbed'<br>tent | Soil CONSISTENCY         VS       - Very Soft         S       - Soft         F       - Firm         St       - Stiff         VSt       - Very Stiff         H       - Hard         RELATIVE DENSITY         VL       - Very Loose         L       - Loose         MD       - Medium Dense         D       - Dense         VD       - Very Dense |
| Ref<br>abb  | er to ex<br>reviatio   | planatory<br>ns and ba   | notes for a sis of d  | or details of<br>escriptions             |  |   | CAR                     | <b>ND</b>                       | NO (NSW/ACT) PTY LT   | D  |   |   |

| (   | D   | C  | arc  | Ino   |  |                             |                       |   |  |   | TE  | ST PIT LOG SHEET   |
|---|---|--|--|---|--|-----------------------------|-----------------------|---|--|---|---|--|
| Clie<br>Pro   | ent:<br>ject:   |  | DWP<br>Detai   | Australia<br>led Site Investigation   | and Ge   | otechn                      | ical                  | Investigation   |  |   | ŀ   | lole No: TP17  |
| Loc   | atior   | n:   | Kyee   | magh Infants School,  | Kyeem  | agh, N                      | SW                    | Job No: 5017190157  |  |   |   | Sheet: 1 of 1  |
| Pos   | ition   | : See  | atta   | ched plan   |  |                             |                       | Angle from Horizontal: 90°  |  |   | Surface                                       | e Elevation:   |
| Exc   | avati   | ion D  | imer   | isions:   |  |                             |                       | Excavation Method.  |  |   | Contra  | ctor:  |
| Dat   | e Exc   | cavat  | ed: 1  | 0/11/18   |  |                             |                       | Logged By: JG   |  | (   | Checke  | ed By:   |
| E)  | cavat   | ion  |  | Sampling & Testing  |  |                             |                       | Material Desc   | ription  |   |   |  |
| Method  | Resistance  | Stability  | Water  | Sample or<br>Field Test   | Depth (m)  | Graphic<br>Log              | Classification        | SOIL TYPE, plasticity or particle characterist<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure   | ic,  | Moisture<br>Condition   | Consistency<br>Relative<br>Density            | STRUCTURE<br>& Other Observations  |
| A   |   |  |  | ES 0.10 m<br>TP17_0.1   |  | ىر غلىر غلىر<br>غلىر غلىر غ | <u> </u>              | 0.10m SAND: fine to medium grained, poorly grade  | ed,  | D   |   | TOPSOIL<br>0.00 m; PID = 0.4ppm  |
| EX-   |   |  |  | ES 0.50 m   |  |                             | SP                    | SAND: fine to medium grained, uniform, yell<br>grey   | /<br> ow   | М   | MD  | MARINE   |
| V   |   | -  |  | IF17_0.5  | 0.5-   |                             |                       | 0.50m<br>TERMINATED AT 0.50 m   |  |   |   |  |
|   |   |  |  |   | - 1.0<br>- 1.0<br>- 1.5<br>- 2.0<br>- 2.5<br>                    |                             |                       | Target depth  |  |   |   |  |
|   |   |  |  |   | -<br>4.5<br>-<br>-   |                             |                       |   |  |   |   |  |
| ME  | THOD  | <u> </u>   |  | PENETRATIO  | N  |                             | <br>  F               | IELD TESTS SAN  | MPLES  |   |   | SOIL CONSISTENCY   |
| EX<br>R<br>HA<br>PT<br>SC<br>AH<br>PS<br>AD<br>HS<br>AD<br>HF<br>WI | EX<br>Ri<br>Ha<br>Pu<br>N<br>Sc<br>V<br>V<br>Sc<br>V<br>V<br>Sc<br>V<br>V<br>Sc<br>V<br>V<br>Sc<br>V<br>V<br>Sc<br>V<br>V<br>Sc<br>V<br>V<br>Sc<br>V<br>V<br>Sc<br>V<br>V<br>Sc<br>V<br>V<br>Sc<br>V<br>V<br>Sc<br>V<br>V<br>Sc<br>V<br>V<br>V<br>Sc<br>V<br>V<br>V<br>Sc<br>V<br>V<br>V<br>V | ccavato<br>pper<br>and aug<br>ush tub<br>ponic dril<br>r hammercussion<br>port spi<br>blid fligh<br>blid fligh<br>blid gligh<br>blid gligh<br>blow fli<br>ashbor<br>pock rolle | e<br>ger<br>e<br>ling<br>her<br>on sam<br>ral auge<br>tt auge<br>ght auge<br>ght auge<br>ght auge<br>e drillir<br>er | et VE Very Easy<br>F Firm<br>H Hard<br>VH Very Hard<br>VH Very Hard<br>VH Very Hard<br>WATER<br>VH Very Hard<br>Water<br>Show<br>F Swater<br>Show<br>Water<br>Water<br>water<br>Water | (No Resista<br>(Refusal)<br>r Level on<br>n<br>inflow<br>outflow | Date                        | S<br>F<br>F<br>F<br>V | SPT       Standard Penetration Test       B         IP       Hand/Pocket Penetrometer       D         ICP       Dynamic Cone Penetrometer       U         VSP       Perth Sand Penetrometer       U         IC       Moisture Content       MOI         BT       Plate Bearing Test       D         VIP       Borehole Impression Test       M         ID       Photoionisation Detector       W         'S       Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa)       LL | - Bulk<br>- Distu<br>- Envi<br>- Thin<br>ISTURE<br>- Dry<br>- Mois<br>- Wet<br>- Plas<br>- Liqui<br>- Mois | disturbe<br>urbed sa<br>ronment<br>wall tub<br>st<br>tic limit<br>id limit<br>sture cor | ed sample<br>mple<br>al sample<br>e 'undistur | rbed'<br>VS - Very Soft<br>S - Soft<br>F - Firm<br>VSt - Stiff<br>VSt - Very Stiff<br>H - Hard<br><b>RELATIVE DENSITY</b><br>VL - Very Loose<br>L - Loose<br>MD - Medium Dense<br>D - Dense<br>VD - Very Dense |
| Ret<br>abb  | er to exporeviation   | planator<br>ns and b   | / notes f<br>asis of c   | or details of<br>escriptions  |  | CAF                         | <b>ND</b>             | NO (NSW/ACT) PTY LTD  | )  |   |   |  |

| Clie     | D<br>ent:      | C                       | owp                  | <b>dino</b><br>Australia |             |                |                |  |                                |                       | TE                                 | ST PIT LOG SHEET                      |
|----------|----------------|-------------------------|----------------------|--------------------------|-------------|----------------|----------------|--|--------------------------------|-----------------------|------------------------------------|---------------------------------------|
| Pro      | ject:          |                         | Detai                | led Site Investigation   | and Ge      | otechn         | ical           | Investigation  |                                |                       | ſ                                  |                                       |
| LOC      | ation          | I: I                    | <pre>Nyee</pre>      | magn Infants School, I   | Kyeem       | agn, Na        | 599            | Job No: 5017190157   | 00                             |                       | 0f.a.a                             | Sheet: 1 of 1                         |
| Mac      | hine           | : See                   | atta<br>10           | tonne Excavator          |             |                |                | Excavation Method  | 0                              |                       | Surrac                             | e Elevation:                          |
| Exc      | avati          | on D                    | imer                 | isions:                  |             |                |                |  |                                | (                     | Contra                             | ctor:                                 |
| Dat      | e Exc          | avat                    | ed: 1                | 10/11/18                 |             |                |                | Logged By: JG  |                                | (                     | Check                              | ed By:                                |
| Ex       | cavat          | ion                     |                      | Sampling & Testing       |             |                |                | Material De  | escription                     |                       |                                    |                                       |
| Method   | Resistance     | Stability               | Water                | Sample or<br>Field Test  | Depth (m)   | Graphic<br>Log | Classification | SOIL TYPE, plasticity or particle characte<br>colour, secondary and minor compone<br>ROCK TYPE, grain size and type, colo<br>fabric & texture, strength, weathering<br>defects and structure | eristic,<br>ents<br>our,<br>g, | Moisture<br>Condition | Consistency<br>Relative<br>Density | STRUCTURE<br>& Other Observations     |
|          |                |                         |                      | ES 0.10 m                | _           | ي علد علد      |                | 0 10m Silty SAND: fine to medium grained, poo  | orly                           | D                     |                                    | TOPSOIL                               |
| <br>×    |                |                         |                      | TP18_0.1<br>ES 0.40 m    | - <u>t</u>  |                |                | graded, grey brown   |                                |                       | <u>+</u>                           | 0.00 <u>m: PID = 0.1ppm</u>           |
| ш<br>    |                |                         |                      | TP18_0.4                 | Ę           |                | SP             | grey   | yenow                          | М                     | L                                  | 0.10 m: PID = 0.1ppm                  |
| ¥        |                |                         |                      |                          |             |                |                | 0.40m<br>TERMINATED AT 0.40 m  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | - 0.5       |                |                | Target depth   |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | F           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | Ē           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          |             |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | $L_{10}$    |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | _ 1.0       |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | -           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | -           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | F           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | - 1.5       |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | F           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | F           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | Ē           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | L20         |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | 2.0         |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | -           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | -           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | F           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | -2.5        |                |                |  |                                |                       |                                    | -                                     |
|          |                |                         |                      |                          | F           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | -           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | F           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | ÷           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | - 3.0       |                |                |  |                                |                       |                                    | -                                     |
|          |                |                         |                      |                          |             |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          |             |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          |             |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | - 3.5       |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | -           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | F           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | F           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | F           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | -4.0        |                |                |  |                                |                       |                                    | -                                     |
|          |                |                         |                      |                          | F           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          |             |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          |             |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | -4.5        |                |                |  |                                |                       |                                    | -                                     |
|          |                |                         |                      |                          | -           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | -           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | F           |                |                |  |                                |                       |                                    |                                       |
|          |                |                         |                      |                          | F           |                |                |  |                                |                       |                                    |                                       |
| ME       | THOD           |                         | 1                    | PENETRATIO               | N           |                | F              | IELD TESTS   | SAMPLES                        |                       | 1                                  | SOIL CONSISTENCY                      |
| EX       | Ex             | cavato                  | r buck               | et VE Very Easy          | (No Resista | ince)          | s              | PT - Standard Penetration Test   | B - Bulk                       | disturbe              | ed sample                          | VS - Very Soft                        |
| HA       | Ha             | pper<br>and au          | ger                  | E Easy<br>F Firm         |             |                |                | IP - Hand/Pocket Penetrometer  | ES - Envi                      | ironment              | al sample                          | e F - Firm                            |
| PT<br>SO | N Sc           | ish tub<br>nic dri      | e<br>ling            | H Hard<br>VH Very Hard   | (Refusal)   |                | P              | SP - Perth Sand Penetrometer   | U - Thin                       | wall tub              | e 'undistu                         | irbed' St - Stiff<br>VSt - Very Stiff |
| AH       | Air            | hamm                    | ner<br>on sam        | water WATER              | ,           |                |                | IC - Moisture Content  | MOISTURE                       |                       |                                    | H - Hard                              |
| AS       | Sh             | iort spi                | ral aug              | er V_Bit Water           | Level on    | Date           |                | MP - Borehole Impression Test  | D - Dry<br>M - Mois            | st                    |                                    | RELATIVE DENSITY                      |
| AD<br>AD | /v So<br>/T So | nia Tiigh<br>olid fligh | n auge<br>nt auge    | er: TC-Bit shown         | inflow      |                | P              | ID - Photoionisation Detector  | W - Wet                        | tic limit             |                                    | L - Loose                             |
| HF       | A Ho<br>B W    | ollow fli<br>ashbor     | ght aug<br>e drillir | ger water<br>ng water    | outflow     |                | <sup>v</sup>   | S - Vane Shear; P=Peak,<br>R=Resdual (uncorrected kPa)   | LL - Liqu                      | id limit              |                                    | MD - Medium Dense<br>D - Dense        |
| RR       | Ro             | ock roll                | er                   | -                        |             |                |                |  | w - Mois                       | sture cor             | nent                               | VD - Very Dense                       |
| Ref      | er to ex       | planator                | / notes f            | or details of            |             |                |                |  |                                |                       |                                    |                                       |
| abb      | reviation      | ns and b                | asis of c            | lescriptions             |             | CAR            | Uľ             | NU (INSVV/AUT) PTY LT  | U                              |                       |                                    |                                       |

|   |   |  | C  | arc  | lno   |   |                              |  |   |   | ΤE   | ST PIT LOG SHEET   |
|---|---|--|--|--|---|---|------------------------------|--|---|---|--|--|
| CI<br>Pr  | ien<br>oje  | t:<br>ct:  | [<br>[   | DWP<br>Detai   | Australia<br>led Site Investigation a   | and Ge  | otechn                       | ical   | Investigation   |   | ŀ  | Hole No: TP19  |
| Lo  | ocat  | tion   | : 1  | <pre><pre></pre></pre>   | magh Infants School, I  | Kyeema  | agh, NS                      | SW   | Job No: 5017190157  |   |  | Sheet: 1 of 1  |
| PC  | osit<br>oob   | ion:   | See  | atta   | ched plan   |   |                              |  | Angle from Horizontal: 90°  |   | Surfac   | e Elevation:   |
| E   | cav   | vati   | on D   | j. 10<br>imer  | sions:  |   |                              |  | Excavation Method.  |   | Contra   | ctor:  |
| Da  | ate   | Exc  | avat   | ed: 1  | 0/11/18   |   |                              |  | Logged By: JG   |   | Check  | ed By:   |
|   | Exca  | avati  | on   |  | Sampling & Testing  |   |                              |  | Material Description  |   |  |  |
| Method  |   | Resistance   | Stability  | Water  | Sample or<br>Field Test   | Depth (m)   | Graphic<br>Log               | Classification                                 | SOIL TYPE, plasticity or particle characteristic,<br>colour, secondary and minor components<br>ROCK TYPE, grain size and type, colour,<br>fabric & texture, strength, weathering,<br>defects and structure  | Moisture<br>Condition   | Consistency<br>Relative<br>Density             | STRUCTURE<br>& Other Observations  |
|   |   |  |  |  | ES 0.10 m   |   | لىر غلىر غلىر<br>غلىر غلىر غ |  | 0.10m Silty SAND: fine to medium grained, poorly  |   |  | TOPSOIL  |
|   |   |  |  |  | ES 0.30 m   | -1  |                              |  | FILL: Gravelly SAND: fine to medium grained, gap  | D   |  | FILL   |
|   | .   |  |  |  | 1F19_0.3  | +   | $\times$                     |  | 0.30m graded, brown grey, fine to medium grained gravel<br>SAND: fine to medium grained, uniform, yellow  | +   | +  |  |
|   | i   |  |  |  |   | - 0.5   |                              | SP   | grey  | м   | L  | -  |
|   |   |  |  |  |   |   |                              |  | 0.80m   |   |  |  |
| EEMAGH BOREHOLE LOGS.GPJ < <drawingfile>&gt; 03/12/2018 16:17 10.0.00 Datgel AGS RTA, Photo, Monitoring Tools</drawingfile> |   |  |  |  |   | -1.0<br>-1.5<br>-2.0<br>-2.5<br>-3.0<br>-3.5<br>-4.0<br>-4.5  |                              |  | Target depth  |   |  |  |
|   | VIET<br>EX<br>TA<br>PT<br>SON<br>AD<br>AD/V<br>AD/T<br>TFA<br>VB<br>R | Exe<br>Rip<br>Ha<br>Pu<br>Sol<br>Air<br>Pe<br>Sol<br>Sol<br>Ho<br>Wa<br>Ro | cavato<br>oper<br>nd aug<br>sh tube<br>nic drill<br>hamm<br>rcussic<br>ort spir<br>lid fligh<br>lid fligh<br>lid fligh<br>lidw flig<br>ashbor<br>ck roll | r bucke<br>er<br>bing<br>er<br>on sam<br>al aug<br>t auge<br>t auge<br>t auge<br>drillin<br>er | et VE Very Easy<br>E Easy<br>F Firm<br>H Hard<br>VH Very Hard<br>VH Very Hard<br>VH Very Hard<br>WATER<br>Pr<br>r: V-Bit<br>r: TC-Bit<br>g water<br>€ water | (No Resista     (Refusal)     Level on     inflow     outflow | ance)<br>Date                | F<br>S<br>H<br>D<br>P<br>M<br>P<br>N<br>P<br>V | Incluir rests     SAMPLES       PT - Standard Penetration Test     B - Bui       P - Hand/Pocket Penetrometer     D - Dis       CP - Dynamic Cone Penetrometer     ES - En       SP - Perth Sand Penetrometer     U - Thi       IC - Moisture Content     MOISTURE       BT - Plate Bearing Test     D - Dry       IP - Borehole Impression Test     M - Moi       ID - Photoinisation Detector     W - We       S - Vane Shear; P=Peak,     LL - Iqu       R=Resdual (uncorrected kPa)     w - Moi | k disturbe<br>turbed sa<br>vironment<br>n wall tub<br>ist<br>ist<br>t<br>stic limit<br>isture cor | ed sample<br>imple<br>ial sample<br>e 'undistu | suit CONSISTENCY<br>VS - Very Soft<br>S - Soft<br>F - Firm<br>VSt - Very Stiff<br>H - Hard<br>RELATIVE DENSITY<br>VL - Very Loose<br>L - Loose<br>MD - Medium Dense<br>D - Dense<br>VD - Very Chanse |
|   | 111<br>Dof-   | to c:  |  | unet-  | pr details of   |   | <u></u>                      |  |   |   |  |  |
|   | keter<br>abbrev   | ιο exp<br>viation  | anatory<br>s and ba  | notes f<br>asis of d   | or details of<br>escriptions  |   | CAR                          | D  | NO (NSW/ACT) PTY LTD  |   |  |  |

|        |  | >   | Ca   | arc   | lno                                       |   |   |                         |                |   |   |   | TE  | ST PIT LOG SHEET  |
|--------|--|---|--|---|---|---|---|-------------------------|----------------|---|---|---|---|---|
| Cli    | ient:  |   |  | )WP   | Australia                                 | vestigation a   | nd Go                                       | otochn                  | ical           | Investigation   |   |   | ŀ   | Hole No: TP20   |
| Lo     | cati   | on:   | ŀ  | (yee  | magh Infa                                 | ants School, K  | yeema                                       | agh, NS                 | SW             | Job No: 5017190157  |   |   |   | Sheet: 1 of 1   |
| Po     | sitic  | on:   | See  | atta  | ched plar                                 | 1   |   |                         |                | Angle from Horizontal: 90   | 0   | 9   | Surfac                                      | e Elevation:  |
| Ex     | cava   | ne<br>atic  | n Di   | men   | sions:                                    | cavator   |   |                         |                | Excavation Method:  |   | (   | Contra                                      | ctor:   |
| Da     | te E   | xca   | avate  | ed: 1   | 0/11/18                                   |   |   |                         |                | Logged By: JG   |   | (   | Checke                                      | ed By:  |
| E      | Excav  | vatio   | n  |   | Samp                                      | ling & Testing  |   |                         |                | Material Des  | scription   |   |   |   |
| Method | Resistance   | Resistance  | Stability  | Water   | S   | ample or<br>ïeld Test   | Depth (m)                                   | Graphic<br>Log          | Classification | SOIL TYPE, plasticity or particle character<br>colour, secondary and minor componen<br>ROCK TYPE, grain size and type, colou<br>fabric & texture, strength, weathering,<br>defects and structure  | ristic,<br>nts<br>ur,   | Moisture<br>Condition                           | Consistency<br>Relative<br>Density          | STRUCTURE<br>& Other Observations   |
|        | +  |   |  |   | ES 0.10 m                                 |   |   | ات علت علت<br>علت علت ع |                | 0.10m Silty SAND: fine to medium grained, poor  | ly ,  | D   |   | TOPSOIL   |
|        |  |   |  |   | ES 0.40 m<br>TP20 0.4                     |   | 1   |                         | ×              | FILL: SAND: fine to medium grained, unifo   | /   |   |   | FILL<br>0 10 m: PID = 0.3ppm  |
|        |  |   |  |   |   |   | F   |                         |                | 0.40m   |   |   |   |   |
| Ц Щ Ц  |  |   |  |   |   |   | - 0.5                                       |                         |                | SAND: fine to medium grained, uniform, y grey   | vellow  | М   |   | MARINE -  |
|        |  |   |  |   |   |   | -   |                         | SP             |   |   |   | L   | -   |
|        |  |   |  |   |   |   | F   |                         |                |   |   |   |   | -   |
| ľ      | -  | _   |  |   |   |   | +   | 114/144                 |                | 0.90m<br>TERMINATED AT 0.90 m   |   |   |   |   |
|        |  |   |  |   |   |   | - 1.0                                       |                         |                | Target depth  |   |   |   |   |
|        |  |   |  |   |   |   | -   |                         |                |   |   |   |   |   |
|        |  |   |  |   |   |   | -2.0  |                         |                |   |   |   |   | -   |
|        |  |   |  |   |   |   | È.  |                         |                |   |   |   |   | -   |
|        |  |   |  |   |   |   | ł   |                         |                |   |   |   |   | -   |
| 0      |  |   |  |   |   |   | -25   |                         |                |   |   |   |   | -   |
|        |  |   |  |   |   |   | - 2.0                                       |                         |                |   |   |   |   | -   |
|        |  |   |  |   |   |   | Ł   |                         |                |   |   |   |   | -   |
|        |  |   |  |   |   |   | - 3.0                                       |                         |                |   |   |   |   | -   |
| 0      |  |   |  |   |   |   | -   |                         |                |   |   |   |   |   |
|        |  |   |  |   |   |   | - 3.5                                       |                         |                |   |   |   |   | -   |
| 5      |  |   |  |   |   |   | - 4.0                                       |                         |                |   |   |   |   | -   |
|        |  |   |  |   |   |   | t   |                         |                |   |   |   |   | -   |
|        |  |   |  |   |   |   | $\left  \right $                            |                         |                |   |   |   |   | -   |
|        |  |   |  |   |   |   | -4.5  |                         |                |   |   |   |   | -   |
|        |  |   |  |   |   |   | -   |                         |                |   |   |   |   | -   |
| N      | IETHO  | OD  |  |   |   | PENETRATION   | 1   | 1                       | F              | IELD TESTS S  | AMPLES  |   |   | SOIL CONSISTENCY  |
|        | X<br>IA<br>IT<br>ION<br>IF<br>S<br>S<br>D/V<br>IF<br>A | Exc<br>Ripp<br>Han<br>Pus<br>Son<br>Air I<br>Pero<br>Soli<br>Soli<br>Soli | avator<br>per<br>id aug<br>h tube<br>ic drill<br>namm<br>cussio<br>rt spir<br>d fligh<br>d fligh | er<br>er<br>ing<br>er<br>n sam<br>al auge<br>t auge<br>t auge<br>t auge | pler<br>er<br>r: V-Bit<br>r: TC-Bit<br>er | VE Very Easy (I<br>E Easy<br>F Firm<br>H Hard<br>VH Very Hard (I<br>WATER<br>Water I<br>shown | No Resista<br>Refusal)<br>Level on<br>nflow | nnce)<br>Date           | F N            | IPI     Standard Penetration Test     B       IP     Hand/Pocket Penetrometer     D       OCP     Dynamic Cone Penetrometer     U       ISP     Perth Sand Penetrometer     U       IC     Moisture Content     M       P     Plate Bearing Test     D       ID     Photoinisation Detector     W       ID     Photoinsisation Detector     W | - Bulk<br>- Distu<br>S - Envir<br>- Thin<br>IOISTURE<br>- Dry<br>- Dry<br>- Moist<br>V - Wet<br>L - Plast | disturbe<br>rbed sa<br>onment<br>wall tube<br>t | d sample<br>mple<br>al sample<br>e 'undistu | v Vs - Very Soft<br>S - Soft<br>rbed' St - Stiff<br>VSt - Stiff<br>H - Hard<br><b>RELATIVE DENSITY</b><br>VL - Very Loose<br>L - Loose<br>MD - Medium Dense |
| R      | VB<br>R<br>R<br>tefer to<br>bbrevia                    | Roc   | shbore<br>k rolle<br>anatory<br>and ba   | n aug<br>drillin<br>r<br>notes fo<br>sis of d                           | g<br>or details of<br>escriptions         | — d water o   | utflow                                      | CAR                     |                | NO (NSW/ACT) PTY LTI  | L - Liquic<br>/ - Moist   | d limit<br>ture con                             | tent  | D - Dense<br>VD - Very Dense  |









### APPENDIX



### LABORATORY ANALYTICAL REPORTS







### Certificate of Analysis

Cardno (NSW/ACT) Pty Ltd Level 9, 203 Pacific Highway St Leonards NSW 2065



NATA Accredited Accreditation Number 1261 Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

### Attention:

Ben Withnall

| Report        |
|---------------|
| Project name  |
| Project ID    |
| Received Date |

627289-S KYEEMAGH INFANTS SCHOOL 80818157 Nov 12, 2018

|  | 1    |       |              | 1            |              | 1            |
|--|------|-------|--------------|--------------|--------------|--------------|
| Client Sample ID                                 |      |       | TP03_0.2     | TP03_1.2     | TP19_0.1     | TP19_0.3     |
| Sample Matrix                                    |      |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.                        |      |       | S18-No14957  | S18-No14958  | S18-No14960  | S18-No14961  |
| Date Sampled                                     |      |       | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
| Test/Reference                                   | LOR  | Unit  |              |              |              |              |
| Total Recoverable Hydrocarbons - 1999 NEPM Fract | ions |       |              |              |              |              |
| TRH C6-C9  | 20   | mg/kg | < 20         | < 20         | < 20         | < 20         |
| TRH C10-C14                                      | 20   | mg/kg | < 20         | < 20         | < 20         | < 20         |
| TRH C15-C28                                      | 50   | mg/kg | < 50         | < 50         | < 50         | < 50         |
| TRH C29-C36                                      | 50   | mg/kg | < 50         | < 50         | < 50         | < 50         |
| TRH C10-36 (Total)                               | 50   | mg/kg | < 50         | < 50         | < 50         | < 50         |
| BTEX   |      |       |              |              |              |              |
| Benzene  | 0.1  | mg/kg | < 0.1        | -            | < 0.1        | < 0.1        |
| Toluene  | 0.1  | mg/kg | < 0.1        | -            | < 0.1        | < 0.1        |
| Ethylbenzene                                     | 0.1  | mg/kg | < 0.1        | -            | < 0.1        | < 0.1        |
| m&p-Xylenes                                      | 0.2  | mg/kg | < 0.2        | -            | < 0.2        | < 0.2        |
| o-Xylene   | 0.1  | mg/kg | < 0.1        | -            | < 0.1        | < 0.1        |
| Xylenes - Total                                  | 0.3  | mg/kg | < 0.3        | -            | < 0.3        | < 0.3        |
| 4-Bromofluorobenzene (surr.)                     | 1    | %     | 97           | -            | 93           | 85           |
| Volatile Organics                                |      |       |              |              |              |              |
| 1.1-Dichloroethane                               | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 1.1-Dichloroethene                               | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 1.1.1-Trichloroethane                            | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 1.1.1.2-Tetrachloroethane                        | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 1.1.2-Trichloroethane                            | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 1.1.2.2-Tetrachloroethane                        | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 1.2-Dibromoethane                                | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 1.2-Dichlorobenzene                              | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 1.2-Dichloroethane                               | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 1.2-Dichloropropane                              | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 1.2.3-Trichloropropane                           | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 1.2.4-Trimethylbenzene                           | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 1.3-Dichlorobenzene                              | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 1.3-Dichloropropane                              | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 1.3.5-Trimethylbenzene                           | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 1.4-Dichlorobenzene                              | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 2-Butanone (MEK)                                 | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 2-Propanone (Acetone)                            | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 4-Chlorotoluene                                  | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| 4-Methyl-2-pentanone (MIBK)                      | 0.5  | mg/kg | -            | < 0.5        | -            | -            |
| Allyl chloride                                   | 0.5  | mg/kg | -            | < 0.5        | -            | -            |



| Client Sample ID                                  |                 |  | TP03_0.2     | TP03_1.2     | TP19_0.1     | TP19_0.3     |
|---|-----------------|--|--------------|--------------|--------------|--------------|
| Sample Matrix                                     |                 |  | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.                         |                 |  | S18-No14957  | S18-No14958  | S18-No14960  | S18-No14961  |
| Date Sampled                                      |                 |  | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
| Test/Reference                                    | LOR             | Unit                                   |              |              |              | ,            |
| Volatile Organics                                 | Lon             | Offic                                  |              |              |              |              |
| Benzene   | 0.1             | ma/ka                                  | _            | < 0.1        | _            | _            |
| Bromobenzene                                      | 0.5             | ma/ka                                  | _            | < 0.5        | _            | _            |
| Bromochloromethane                                | 0.5             | ma/ka                                  | -            | < 0.5        | -            | -            |
| Bromodichloromethane                              | 0.5             | ma/ka                                  | -            | < 0.5        | -            | -            |
| Bromoform   | 0.5             | ma/ka                                  | -            | < 0.5        | -            | -            |
| Bromomethane                                      | 0.5             | ma/ka                                  | -            | < 0.5        | -            | -            |
| Carbon disulfide                                  | 0.5             | ma/ka                                  | -            | < 0.5        | -            | -            |
| Carbon Tetrachloride                              | 0.5             | ma/ka                                  | -            | < 0.5        | -            | _            |
| Chlorobenzene                                     | 0.5             | ma/ka                                  | -            | < 0.5        | -            | _            |
| Chloroethane                                      | 0.5             | ma/ka                                  | -            | < 0.5        | -            | _            |
| Chloroform  | 0.5             | ma/ka                                  | _            | < 0.5        | _            | _            |
| Chloromethane                                     | 0.5             | ma/ka                                  | _            | < 0.5        | _            | _            |
| cis-1 2-Dichloroethene                            | 0.5             | ma/ka                                  | _            | < 0.5        | _            | _            |
| cis-1 3-Dichloropropene                           | 0.5             | ma/ka                                  | _            | < 0.5        | _            | _            |
| Dibromochloromethane                              | 0.5             | ma/ka                                  | _            | < 0.5        | _            | _            |
| Dibromomethane                                    | 0.5             | ma/ka                                  | _            | < 0.5        | _            | _            |
| Dichlorodifluoromethane                           | 0.5             | ma/ka                                  |              | < 0.5        |              |              |
| Ethylbenzene                                      | 0.0             | ma/ka                                  |              | < 0.5        |              |              |
|   | 0.1             | ma/ka                                  |              | < 0.1        |              |              |
|   | 0.5             | ma/ka                                  |              | < 0.5        |              |              |
| m&n-Xylenes                                       | 0.0             | ma/ka                                  | _            | < 0.2        | _            | _            |
| Methylene Chloride                                | 0.2             | ma/ka                                  | _            | < 0.2        | _            | _            |
|   | 0.0             | ma/ka                                  | _            | < 0.0        | _            | _            |
| Styrepe   | 0.1             | ma/ka                                  | _            | < 0.1        | _            | _            |
| Tetrachloroethene                                 | 0.5             | ma/ka                                  | _            | < 0.5        | _            | _            |
|   | 0.0             | ma/ka                                  | _            | < 0.1        | _            | _            |
| trans-1 2-Dichloroethene                          | 0.1             | ma/ka                                  | _            | < 0.1        | _            | _            |
| trans-1 3-Dichloropropene                         | 0.5             | ma/ka                                  | _            | < 0.5        | _            | _            |
| Trichloroethene                                   | 0.5             | ma/ka                                  | _            | < 0.5        | _            | _            |
| Trichlorofluoromethane                            | 0.5             | ma/ka                                  | _            | < 0.5        | _            | _            |
|   | 0.5             | ma/ka                                  | _            | < 0.5        | _            | _            |
| Xylenes - Total                                   | 0.0             | ma/ka                                  | _            | < 0.0        | _            | _            |
| Total MAH*  | 0.5             | ma/ka                                  | _            | < 0.5        | _            | _            |
| Vic EPA IWRG 621 CHC (Total)*                     | 0.5             | ma/ka                                  | _            | < 0.5        | _            | _            |
| Vic EPA IWRG 621 Other CHC (Total)*               | 0.5             | ma/ka                                  | _            | < 0.5        | _            | _            |
| 4-Bromofluorobenzene (surr.)                      | 1               | ////////////////////////////////////// | _            | 107          | _            | _            |
| Toluene-d8 (surr.)                                | 1               | %                                      | -            | 99           | -            | _            |
| Total Recoverable Hydrocarbons - 2013 NEPM Fract  | ions            | 70                                     |              |              |              |              |
| Nanhthalene <sup>N02</sup>                        | 0.5             | ma/ka                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| TRH C6-C10  | 20              | ma/ka                                  | ~ 20         | ~ 20         | ~ 20         | ~ 20         |
| TPH C6 C10 loss BTEX (E1) <sup>N04</sup>          | 20              | mg/kg                                  | < 20         | < 20         | < 20         | < 20         |
| TRH \C10-C16                                      | <u>20</u><br>50 | ma/ka                                  | ~ 50         | < 50         | < 50         | ~ 50         |
| TRH >C10-C16 less Nanhthalana (E2) <sup>N01</sup> | 50              | ma/ka                                  | ~ 50         | < 50         | < 50         | < 50         |
| TRH \C16-C34                                      | 100             | ma/ka                                  | ~ 100        | ~ 100        | < 100        | < 100        |
| TRH \C34-C40                                      | 100             | ma/ka                                  | < 100        | < 100        | < 100        | < 100        |
| TPH >C10-C40 (total)*                             | 100             | mg/kg                                  | < 100        | < 100        | < 100        | < 100        |
| 1111 /010-040 (lotal)                             | 100             | ing/kg                                 |              | < 100        | < 100        |              |



| Client Sample ID                      |      |          | TP03_0.2     | TP03_1.2     | TP19_0.1     | TP19_0.3     |
|---------------------------------------|------|----------|--------------|--------------|--------------|--------------|
| Sample Matrix                         |      |          | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.             |      |          | S18-No14957  | S18-No14958  | S18-No14960  | S18-No14961  |
| Date Sampled                          |      |          | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
| Test/Reference                        | LOR  | Unit     |              |              |              |              |
| Polycyclic Aromatic Hydrocarbons      |      |          |              |              |              |              |
| Benzo(a)pyrene TEQ (lower bound) *    | 0.5  | ma/ka    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(a)pyrene TEQ (medium bound) *   | 0.5  | ma/ka    | 0.6          | 0.6          | 0.6          | 0.6          |
| Benzo(a)pyrene TEQ (upper bound) *    | 0.5  | ma/ka    | 1.2          | 1.2          | 1.2          | 1.2          |
| Acenaphthene                          | 0.5  | ma/ka    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Acenaphthylene                        | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Anthracene                            | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benz(a)anthracene                     | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(a)pyrene                        | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(b&j)fluoranthene <sup>N07</sup> | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(g.h.i)perylene                  | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(k)fluoranthene                  | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Chrysene                              | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Dibenz(a.h)anthracene                 | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Fluoranthene                          | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Fluorene                              | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Indeno(1.2.3-cd)pyrene                | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Naphthalene                           | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Phenanthrene                          | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Pyrene                                | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Total PAH*                            | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| 2-Fluorobiphenyl (surr.)              | 1    | %        | 92           | 116          | 125          | 134          |
| p-Terphenyl-d14 (surr.)               | 1    | %        | 117          | 111          | 133          | 149          |
| Organochlorine Pesticides             |      |          |              |              |              |              |
| Chlordanes - Total                    | 0.1  | mg/kg    | < 0.1        | -            | -            | -            |
| 4.4'-DDD                              | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| 4.4'-DDE                              | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| 4.4'-DDT                              | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| a-BHC                                 | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| Aldrin                                | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| b-BHC                                 | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| d-BHC                                 | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| Dieldrin                              | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| Endosulfan I                          | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| Endosulfan II                         | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| Endosulfan sulphate                   | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| Endrin                                | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| Endrin aldehyde                       | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| Endrin ketone                         | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| g-BHC (Lindane)                       | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| Heptachlor                            | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| Heptachlor epoxide                    | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| Hexachlorobenzene                     | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| Methoxychlor                          | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
| I oxapnene                            | 1    | mg/kg    | < 1          | -            | -            | -            |
|                                       | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
|                                       | 0.05 | mg/kg    | < 0.05       | -            | -            | -            |
|                                       | 0.1  | mg/kg    | < 0.1        | -            | -            | -            |
| VIC EPA IVVRG 621 Other OCP (Total)^  | 0.1  | mg/kg    | < 0.1        | -            | -            | -            |
| Dibutyichiorendate (SUIT.)            | 1    | <u>%</u> | 69           | -            | -            | -            |
| i etrachioro-m-xyiene (surr.)         | 1    | %        | 57           | -            | -            | -            |



| Client Sample ID             |      |       | TP03_0.2     | TP03_1.2     | TP19_0.1     | TP19_0.3     |
|------------------------------|------|-------|--------------|--------------|--------------|--------------|
| Sample Matrix                |      |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.    |      |       | S18-No14957  | S18-No14958  | S18-No14960  | S18-No14961  |
| Date Sampled                 |      |       | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
| Test/Reference               | I OR | Unit  |              |              |              |              |
| Organophosphorus Pesticides  |      | 0     |              |              |              |              |
| Azinphos-methyl              | 0.2  | ma/ka | < 0.2        | _            | _            | _            |
| Bolstar                      | 0.2  | ma/ka | < 0.2        | _            | _            | _            |
| Chlorfenvinphos              | 0.2  | ma/ka | < 0.2        | -            | -            | _            |
| Chlorovrifos                 | 0.2  | ma/ka | < 0.2        | _            | _            | _            |
| Chlorovrifos-methyl          | 0.2  | ma/ka | < 0.2        | -            | -            | _            |
| Coumaphos                    | 2    | ma/ka | < 2          | -            | -            | -            |
| Demeton-S                    | 0.2  | ma/ka | < 0.2        | -            | _            | -            |
| Demeton-Q                    | 0.2  | ma/ka | < 0.2        | -            | -            | -            |
| Diazinon                     | 0.2  | ma/ka | < 0.2        | -            | -            | _            |
| Dichloryos                   | 0.2  | ma/ka | < 0.2        | -            | -            | _            |
| Dimethoate                   | 0.2  | ma/ka | < 0.2        | -            | -            | _            |
| Disulfoton                   | 0.2  | ma/ka | < 0.2        | -            | -            | _            |
| EPN                          | 0.2  | ma/ka | < 0.2        | -            | _            | -            |
| Ethion                       | 0.2  | ma/ka | < 0.2        | -            | _            | -            |
| Ethoprop                     | 0.2  | ma/ka | < 0.2        | -            | _            | -            |
| Ethyl parathion              | 0.2  | ma/ka | < 0.2        | -            | -            | -            |
| Fenitrothion                 | 0.2  | ma/ka | < 0.2        | -            | -            | -            |
| Fensulfothion                | 0.2  | ma/ka | < 0.2        | -            | -            | -            |
| Fenthion                     | 0.2  | ma/ka | < 0.2        | -            | -            | _            |
| Malathion                    | 0.2  | ma/ka | < 0.2        | -            | -            | -            |
| Merphos                      | 0.2  | ma/ka | < 0.2        | -            | -            | -            |
| Methyl parathion             | 0.2  | ma/ka | < 0.2        | -            | -            | -            |
| Mevinphos                    | 0.2  | ma/ka | < 0.2        | -            | -            | -            |
| Monocrotophos                | 2    | mg/kg | < 2          | -            | -            | -            |
| Naled                        | 0.2  | mg/kg | < 0.2        | -            | -            | -            |
| Omethoate                    | 2    | mg/kg | < 2          | -            | -            | -            |
| Phorate                      | 0.2  | mg/kg | < 0.2        | -            | -            | -            |
| Pirimiphos-methyl            | 0.2  | mg/kg | < 0.2        | -            | -            | -            |
| Pyrazophos                   | 0.2  | mg/kg | < 0.2        | -            | -            | -            |
| Ronnel                       | 0.2  | mg/kg | < 0.2        | -            | -            | -            |
| Terbufos                     | 0.2  | mg/kg | < 0.2        | -            | -            | -            |
| Tetrachlorvinphos            | 0.2  | mg/kg | < 0.2        | -            | -            | -            |
| Tokuthion                    | 0.2  | mg/kg | < 0.2        | -            | -            | -            |
| Trichloronate                | 0.2  | mg/kg | < 0.2        | -            | -            | -            |
| Triphenylphosphate (surr.)   | 1    | %     | 59           | -            | -            | -            |
| Polychlorinated Biphenyls    |      |       |              |              |              |              |
| Aroclor-1016                 | 0.1  | mg/kg | < 0.1        | -            | -            | -            |
| Aroclor-1221                 | 0.1  | mg/kg | < 0.1        | -            | -            | -            |
| Aroclor-1232                 | 0.1  | mg/kg | < 0.1        | -            | -            | -            |
| Aroclor-1242                 | 0.1  | mg/kg | < 0.1        | -            | -            | -            |
| Aroclor-1248                 | 0.1  | mg/kg | < 0.1        | -            | -            | -            |
| Aroclor-1254                 | 0.1  | mg/kg | < 0.1        | -            | -            | -            |
| Aroclor-1260                 | 0.1  | mg/kg | < 0.1        | -            | -            | -            |
| Total PCB*                   | 0.1  | mg/kg | < 0.1        | -            | -            | -            |
| Dibutylchlorendate (surr.)   | 1    | %     | 69           | -            | -            | -            |
| Tetrachloro-m-xylene (surr.) | 1    | %     | 57           | -            | -            | -            |
|                              |      |       |              |              |              |              |
| % Moisture                   | 1    | %     | 2.8          | 3.8          | 1.4          | 18           |



| Client Sample ID<br>Sample Matrix<br>Eurofins   mgt Sample No.<br>Date Sampled |     |       | TP03_0.2<br>Soil<br>S18-No14957<br>Nov 10, 2018 | TP03_1.2<br>Soil<br>S18-No14958<br>Nov 10, 2018 | TP19_0.1<br>Soil<br>S18-No14960<br>Nov 10, 2018 | TP19_0.3<br>Soil<br>S18-No14961<br>Nov 10, 2018 |
|--|-----|-------|---|---|---|---|
| Test/Reference   | LOR | Unit  |   |   |   |   |
| Heavy Metals   |     |       |   |   |   |   |
| Arsenic  | 2   | mg/kg | < 2   | < 2   | < 2   | < 2   |
| Cadmium  | 0.4 | mg/kg | < 0.4   | < 0.4   | < 0.4   | < 0.4   |
| Chromium   | 5   | mg/kg | < 5   | < 5   | < 5   | < 5   |
| Copper   | 5   | mg/kg | 6.6   | < 5   | 7.3   | 10  |
| Lead   | 5   | mg/kg | 19  | 6.2   | 32  | 10  |
| Mercury  | 0.1 | mg/kg | < 0.1   | < 0.1   | < 0.1   | < 0.1   |
| Nickel   | 5   | mg/kg | < 5   | < 5   | < 5   | < 5   |
| Zinc   | 5   | mg/kg | 35  | 11  | 29  | 25  |

| Client Sample ID                                  |      |       | TP01_0.2     | TP01_0.9     | TP02_0.1     | TP02_0.4     |
|---|------|-------|--------------|--------------|--------------|--------------|
| Sample Matrix                                     |      |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.                         |      |       | S18-No14962  | S18-No14963  | S18-No14964  | S18-No14965  |
| Date Sampled                                      |      |       | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
| Test/Reference                                    | LOR  | Unit  |              |              |              |              |
| Total Recoverable Hydrocarbons - 1999 NEPM Fract  | ions |       |              |              |              |              |
| TRH C6-C9   | 20   | mg/kg | < 20         | < 20         | < 20         | < 20         |
| TRH C10-C14                                       | 20   | mg/kg | < 20         | < 20         | < 20         | < 20         |
| TRH C15-C28                                       | 50   | mg/kg | < 50         | < 50         | 63           | < 50         |
| TRH C29-C36                                       | 50   | mg/kg | 62           | < 50         | 110          | < 50         |
| TRH C10-36 (Total)                                | 50   | mg/kg | 62           | < 50         | 173          | < 50         |
| BTEX  |      |       |              |              |              |              |
| Benzene   | 0.1  | mg/kg | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| Toluene   | 0.1  | mg/kg | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| Ethylbenzene                                      | 0.1  | mg/kg | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| m&p-Xylenes                                       | 0.2  | mg/kg | < 0.2        | < 0.2        | < 0.2        | < 0.2        |
| o-Xylene  | 0.1  | mg/kg | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| Xylenes - Total                                   | 0.3  | mg/kg | < 0.3        | < 0.3        | < 0.3        | < 0.3        |
| 4-Bromofluorobenzene (surr.)                      | 1    | %     | 89           | 92           | 107          | 95           |
| Total Recoverable Hydrocarbons - 2013 NEPM Fract  |      |       |              |              |              |              |
| Naphthalene <sup>N02</sup>                        | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| TRH C6-C10  | 20   | mg/kg | < 20         | < 20         | < 20         | < 20         |
| TRH C6-C10 less BTEX (F1) <sup>N04</sup>          | 20   | mg/kg | < 20         | < 20         | < 20         | < 20         |
| TRH >C10-C16                                      | 50   | mg/kg | < 50         | < 50         | < 50         | < 50         |
| TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup> | 50   | mg/kg | < 50         | < 50         | < 50         | < 50         |
| TRH >C16-C34                                      | 100  | mg/kg | < 100        | < 100        | 130          | < 100        |
| TRH >C34-C40                                      | 100  | mg/kg | < 100        | < 100        | < 100        | < 100        |
| TRH >C10-C40 (total)*                             | 100  | mg/kg | < 100        | < 100        | 130          | < 100        |
| Polycyclic Aromatic Hydrocarbons                  |      |       |              |              |              |              |
| Benzo(a)pyrene TEQ (lower bound) *                | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(a)pyrene TEQ (medium bound) *               | 0.5  | mg/kg | 0.6          | 0.6          | 0.6          | 0.6          |
| Benzo(a)pyrene TEQ (upper bound) *                | 0.5  | mg/kg | 1.2          | 1.2          | 1.2          | 1.2          |
| Acenaphthene                                      | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Acenaphthylene                                    | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Anthracene  | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benz(a)anthracene                                 | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(a)pyrene                                    | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(b&j)fluoranthene <sup>N07</sup>             | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(g.h.i)perylene                              | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |



| Client Sample ID                    |      |       | TP01 0.2     | TP01 0.9     | TP02 0.1     | TP02 0.4     |
|-------------------------------------|------|-------|--------------|--------------|--------------|--------------|
| Sample Matrix                       |      |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins I mat Sample No            |      |       | S18-No14962  | S18-No14963  | S18-No14964  | S18-No14965  |
| Data Sampled                        |      |       | Nov 10, 2019 | Nov 10, 2018 | Nov 10, 2019 | Nov 10, 2019 |
|                                     |      |       | NOV 10, 2016 | NOV 10, 2018 | NOV 10, 2018 | NOV 10, 2018 |
| Test/Reference                      | LOR  | Unit  |              |              |              |              |
| Polycyclic Aromatic Hydrocarbons    |      |       |              |              |              |              |
| Benzo(k)fluoranthene                | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Chrysene                            | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Dibenz(a.h)anthracene               | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Fluoranthene                        | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Fluorene                            | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Indeno(1.2.3-cd)pyrene              | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Naphthalene                         | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Phenanthrene                        | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Pyrene                              | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Total PAH*                          | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| 2-Fluorobiphenyl (surr.)            | 1    | %     | 121          | 96           | 87           | 86           |
| p-lerphenyl-d14 (surr.)             | 1    | %     | 115          | 102          | 100          | 93           |
| Organochlorine Pesticides           |      |       |              |              |              |              |
| Chlordanes - Total                  | 0.1  | mg/kg | -            | -            | 0.7          | -            |
| 4.4'-DDD                            | 0.05 | mg/kg | -            | -            | < 0.05       | -            |
| 4.4'-DDE                            | 0.05 | mg/kg | -            | -            | 0.06         | -            |
| 4.4'-DDT                            | 0.05 | mg/kg | -            | -            | 0.06         | -            |
| a-BHC                               | 0.05 | mg/kg | -            | -            | < 0.05       | -            |
| Aldrin                              | 0.05 | mg/kg | -            | -            | < 0.05       | -            |
| b-BHC                               | 0.05 | mg/kg | -            | -            | < 0.05       | -            |
| d-BHC                               | 0.05 | mg/kg | -            | -            | < 0.05       | -            |
| Dieldrin                            | 0.05 | mg/kg | -            | -            | 0.64         | -            |
| Endosulfan I                        | 0.05 | mg/kg | -            | -            | < 0.05       | -            |
| Endosulfan II                       | 0.05 | mg/kg | -            | -            | < 0.05       | -            |
| Endosulfan sulphate                 | 0.05 | mg/kg | -            | -            | < 0.05       | -            |
| Endrin                              | 0.05 | mg/kg | -            | -            | < 0.05       | -            |
| Endrin aldehyde                     | 0.05 | mg/kg | -            | -            | < 0.05       | -            |
| Endrin ketone                       | 0.05 | mg/kg | -            | -            | < 0.05       | -            |
| g-BHC (Lindane)                     | 0.05 | mg/kg | -            | -            | < 0.05       | -            |
| Heptachlor                          | 0.05 | mg/kg | -            | -            | < 0.05       | -            |
| Heptachlor epoxide                  | 0.05 | mg/kg | -            | -            | < 0.05       | -            |
| Hexachlorobenzene                   | 0.05 | mg/kg | -            | -            | < 0.05       | -            |
| Methoxychlor                        | 0.05 | mg/kg | -            | -            | < 0.05       | -            |
| Toxaphene                           | 1    | mg/kg | -            | -            | < 1          | -            |
| Aldrin and Dieldrin (Total)*        | 0.05 | mg/kg | -            | -            | 0.64         | -            |
| DDT + DDE + DDD (Total)*            | 0.05 | mg/kg | -            | -            | 0.12         | -            |
| Vic EPA IWRG 621 OCP (Total)*       | 0.1  | mg/kg | -            | -            | 1.46         | -            |
| Vic EPA IWRG 621 Other OCP (Total)* | 0.1  | mg/kg | -            | -            | 0.7          | -            |
| Dibutylchlorendate (surr.)          | 1    | %     | -            | -            | 84           | -            |
| l etrachloro-m-xylene (surr.)       | 1    | %     | -            | -            | 95           | -            |
| Organophosphorus Pesticides         |      |       |              |              |              |              |
| Azinphos-methyl                     | 0.2  | mg/kg | -            | -            | < 0.2        | -            |
| Bolstar                             | 0.2  | mg/kg | -            | -            | < 0.2        | -            |
| Chlortenvinphos                     | 0.2  | mg/kg | -            | -            | < 0.2        | -            |
| Chlorpyrifos                        | 0.2  | mg/kg | -            | -            | < 0.2        | -            |
| Chlorpyrifos-methyl                 | 0.2  | mg/kg | -            | -            | < 0.2        | -            |
| Coumaphos                           | 2    | mg/kg | -            | -            | < 2          | -            |
| Demeton-S                           | 0.2  | mg/kg | -            | -            | < 0.2        | -            |
| Demeton-O                           | 0.2  | mg/kg | -            | -            | < 0.2        | -            |



| Client Sample ID             |     |       | TP01_0.2     | TP01_0.9     | TP02_0.1     | TP02_0.4     |
|------------------------------|-----|-------|--------------|--------------|--------------|--------------|
| Sample Matrix                |     |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.    |     |       | S18-No14962  | S18-No14963  | S18-No14964  | S18-No14965  |
| Date Sampled                 |     |       | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
| Test/Reference               | LOR | Unit  |              |              |              |              |
| Organophosphorus Pesticides  |     |       |              |              |              |              |
| Diazinon                     | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Dichlorvos                   | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Dimethoate                   | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Disulfoton                   | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| EPN                          | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Ethion                       | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Ethoprop                     | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Ethyl parathion              | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Fenitrothion                 | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Fensulfothion                | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Fenthion                     | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Malathion                    | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Merphos                      | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Methyl parathion             | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Mevinphos                    | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Monocrotophos                | 2   | mg/kg | -            | -            | < 2          | -            |
| Naled                        | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Omethoate                    | 2   | mg/kg | -            | -            | < 2          | -            |
| Phorate                      | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Pirimiphos-methyl            | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Pyrazophos                   | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Ronnel                       | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
|                              | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
|                              | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
|                              | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
|                              | 0.2 | mg/kg | -            | -            | < 0.2        | -            |
| Polychlorinated Binhonyls    | I   | 70    | -            | -            | 94           | -            |
|                              | 0.4 |       |              |              | . 0.1        |              |
| Aroclor-1016                 | 0.1 | mg/kg | -            | -            | < 0.1        | -            |
| Aroclor 1222                 | 0.1 | mg/kg | -            | -            | < 0.1        | -            |
| Aroclor 1242                 | 0.1 | mg/kg | -            | -            | < 0.1        | -            |
| Aroclor-1242                 | 0.1 | mg/kg |              |              | < 0.1        |              |
| Aroclor-1254                 | 0.1 | ma/ka | _            | _            | < 0.1        | _            |
| Aroclor-1260                 | 0.1 | ma/ka | _            | _            | < 0.1        | _            |
| Total PCB*                   | 0.1 | ma/ka | -            | -            | < 0.1        | -            |
| Dibutylchlorendate (surr.)   | 1   | %     | -            | -            | 84           | -            |
| Tetrachloro-m-xylene (surr.) | 1   | %     | -            | -            | 95           | -            |
|                              |     |       |              |              |              |              |
| % Moisture                   | 1   | %     | 4.0          | 3.6          | 5.3          | 4.7          |
| Heavy Metals                 |     |       | -            |              |              |              |
| Arsenic                      | 2   | ma/ka | < 2          | < 2          | < 2          | < 2          |
| Cadmium                      | 0.4 | ma/ka | < 0.4        | < 0.4        | < 0.4        | < 0.4        |
| Chromium                     | 5   | mg/ka | 8.8          | < 5          | 18           | 10           |
| Copper                       | 5   | mg/kg | 27           | < 5          | 9.4          | 6.8          |
| Lead                         | 5   | mg/kg | 19           | 18           | 35           | 8.1          |
| Mercury                      | 0.1 | mg/kg | < 0.1        | < 0.1        | 0.7          | < 0.1        |
| Nickel                       | 5   | mg/kg | 15           | < 5          | 15           | 9.6          |
| Zinc                         | 5   | mg/kg | 44           | 20           | 72           | 27           |



| Client Sample ID                                 |      |         | TP04_0.1     | TP05_0.1     | TP05_0.9     | TP06_0.1     |
|--|------|---------|--------------|--------------|--------------|--------------|
| Sample Matrix                                    |      |         | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.                        |      |         | S18-No14966  | S18-No14967  | S18-No14968  | S18-No14969  |
| Date Sampled                                     |      |         | Nov 10, 2018 | Nov 10, 2018 | Nov 10. 2018 | Nov 10, 2018 |
| Test/Reference                                   | LOP  | Linit   |              |              |              |              |
| Total Recoverable Hydrocarbons - 1999 NEPM Fract | ions | Offic   |              |              |              |              |
|  | 20   | malka   | < 20         | < 20         | < 20         | - 20         |
| TRH C10 C14                                      | 20   | mg/kg   | < 20         | < 20         | < 20         | < 20         |
|  | 20   | mg/kg   | < 20         | < 20         | < 20         | < 20         |
| TPH C20 C26                                      | 50   | mg/kg   | < 50         | < 50         | < 50         | 100          |
| TRH C10-36 (Total)                               | 50   | mg/kg   | < 50         | < 50         | < 50         | 580          |
| BTEX   | 50   | шу/ку   | < 50         | < 50         | < 30         | 500          |
| Banzana  | 0.1  | malka   | - 0.1        | - 0.1        |              | - 0.1        |
|  | 0.1  | mg/kg   | < 0.1        | < 0.1        | -            | < 0.1        |
| Ethylhonzono                                     | 0.1  | mg/kg   | < 0.1        | < 0.1        | -            | < 0.1        |
|  | 0.1  | mg/kg   | < 0.1        | < 0.1        | -            | < 0.2        |
|  | 0.2  | mg/kg   | < 0.2        | < 0.2        | -            | < 0.2        |
| Vulonos Total                                    | 0.1  | mg/kg   | < 0.1        | < 0.1        | -            | < 0.1        |
| 4 Bromefluerebenzene (curr.)                     | 0.5  | 0/.     | < 0.5        | < 0.5<br>80  | -            | <u> </u>     |
| Velatile Organics                                | I    | /0      | 95           | 80           | -            | 30           |
|  | 0.5  | ~~~//c~ |              |              | .05          |              |
|  | 0.5  | mg/kg   | -            | -            | < 0.5        | -            |
|  | 0.5  | mg/kg   | -            | -            | < 0.5        | -            |
|  | 0.5  | mg/kg   | -            | -            | < 0.5        | -            |
| 1.1.2-Tetrachioroethane                          | 0.5  | mg/kg   | -            | -            | < 0.5        | -            |
|  | 0.5  | mg/kg   | -            | -            | < 0.5        | -            |
| 1.1.2.2-Tetrachioroethane                        | 0.5  | mg/kg   | -            | -            | < 0.5        | -            |
|  | 0.5  | mg/kg   | -            | -            | < 0.5        | -            |
| 1.2-Dichloropenzene                              | 0.5  | mg/kg   | -            | -            | < 0.5        | -            |
|  | 0.5  | mg/kg   | -            | -            | < 0.5        | -            |
| 1.2-Dichloropropane                              | 0.5  | mg/kg   | -            | -            | < 0.5        | -            |
| 1.2.4 Trimethylhonzono                           | 0.5  | mg/kg   | -            | -            | < 0.5        | -            |
|  | 0.5  | mg/kg   | -            | -            | < 0.5        | -            |
|  | 0.5  | mg/kg   | -            | -            | < 0.5        | -            |
| 1.3.5 Trimothylbonzono                           | 0.5  | mg/kg   | -            | -            | < 0.5        | -            |
|  | 0.5  | mg/kg   | -            | -            | < 0.5        | -            |
| 2-Butanone (MEK)                                 | 0.5  | ma/ka   | -            | _            | < 0.5        | _            |
| 2-Bronanone (Acetone)                            | 0.5  | mg/kg   | -            |              | < 0.5        |              |
|  | 0.5  | ma/ka   | -            | _            | < 0.5        | _            |
| 4-Methyl-2-pentanone (MIBK)                      | 0.5  | ma/ka   | _            | _            | < 0.5        | _            |
| Allyl chloride                                   | 0.5  | ma/ka   | _            | _            | < 0.5        | _            |
| Benzene  | 0.0  | ma/ka   | _            | _            | < 0.5        | _            |
| Bromohenzene                                     | 0.5  | ma/ka   | _            | _            | < 0.5        | _            |
| Bromochloromethane                               | 0.5  | ma/ka   | -            | _            | < 0.5        | _            |
| Bromodichloromethane                             | 0.5  | ma/ka   | _            | _            | < 0.5        | _            |
| Bromoform  | 0.5  | ma/ka   | _            | _            | < 0.5        | _            |
| Bromomethane                                     | 0.5  | ma/ka   | -            | -            | < 0.5        | _            |
| Carbon disulfide                                 | 0.5  | ma/ka   | -            | -            | < 0.5        | _            |
| Carbon Tetrachloride                             | 0.5  | ma/ka   | -            | -            | < 0.5        | _            |
| Chlorobenzene                                    | 0.5  | ma/ka   | -            | -            | < 0.5        | _            |
| Chloroethane                                     | 0.5  | ma/ka   | -            | -            | < 0.5        | _            |
| Chloroform                                       | 0.5  | ma/ka   | -            | -            | < 0.5        | _            |
| Chloromethane                                    | 0.5  | ma/ka   | -            | -            | < 0.5        | _            |
| cis-1.2-Dichloroethene                           | 0.5  | ma/ka   | -            | -            | < 0.5        | -            |
| cis-1.3-Dichloropropene                          | 0.5  | mg/kg   | -            | -            | < 0.5        | -            |



| Client Sample ID                                  |      |       | TP04_0.1     | TP05_0.1     | TP05_0.9     | TP06_0.1      |
|---|------|-------|--------------|--------------|--------------|---------------|
| Sample Matrix                                     |      |       | Soil         | Soil         | Soil         | Soil          |
| Eurofins   mgt Sample No.                         |      |       | S18-No14966  | S18-No14967  | S18-No14968  | S18-No14969   |
| Date Sampled                                      |      |       | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018  |
| Test/Reference                                    |      | Lloit |              |              |              | 1000 10, 2010 |
| Volatile Organics                                 | LOIN | Offic |              |              |              |               |
| Dibromochloromothana                              | 0.5  | ma/ka |              |              | < 0.5        |               |
| Dibromomethene                                    | 0.5  | mg/kg | -            | -            | < 0.5        | -             |
| Dichloredifluoromethane                           | 0.5  | mg/kg | -            | -            | < 0.5        | -             |
| Ethylbenzene                                      | 0.0  | ma/ka | _            |              | < 0.5        |               |
|   | 0.1  | ma/ka |              |              | < 0.1        |               |
| Isopropyl benzene (Cumene)                        | 0.5  | ma/ka | _            | _            | < 0.5        | _             |
| m&p-Xylenes                                       | 0.0  | ma/ka | _            | _            | < 0.9        | _             |
| Methylene Chloride                                | 0.5  | ma/ka | _            | _            | < 0.2        | _             |
|   | 0.0  | ma/ka | _            | _            | < 0.0        | _             |
| Styrepe   | 0.1  | ma/ka | _            | _            | < 0.1        | _             |
| Tetrachloroethene                                 | 0.5  | ma/ka | _            | -            | < 0.5        | _             |
| Toluene   | 0.1  | ma/ka | -            | -            | < 0.1        | -             |
| trans-1.2-Dichloroethene                          | 0.5  | ma/ka | _            | -            | < 0.5        | -             |
| trans-1.3-Dichloropropene                         | 0.5  | ma/ka | _            | -            | < 0.5        | -             |
| Trichloroethene                                   | 0.5  | ma/ka | -            | -            | < 0.5        | -             |
| Trichlorofluoromethane                            | 0.5  | ma/ka | -            | -            | < 0.5        | -             |
| Vinvl chloride                                    | 0.5  | ma/ka | -            | -            | < 0.5        | -             |
| Xylenes - Total                                   | 0.3  | mg/kg | -            | -            | < 0.3        | -             |
| Total MAH*  | 0.5  | mg/kg | -            | -            | < 0.5        | -             |
| Vic EPA IWRG 621 CHC (Total)*                     | 0.5  | mg/kg | -            | -            | < 0.5        | -             |
| Vic EPA IWRG 621 Other CHC (Total)*               | 0.5  | mg/kg | -            | -            | < 0.5        | -             |
| 4-Bromofluorobenzene (surr.)                      | 1    | %     | -            | -            | 101          | -             |
| Toluene-d8 (surr.)                                | 1    | %     | -            | -            | 98           | -             |
| Total Recoverable Hydrocarbons - 2013 NEPM Fract  | ions |       |              |              |              |               |
| Naphthalene <sup>N02</sup>                        | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5         |
| TRH C6-C10  | 20   | mg/kg | < 20         | < 20         | < 20         | < 20          |
| TRH C6-C10 less BTEX (F1) <sup>N04</sup>          | 20   | mg/kg | < 20         | < 20         | < 20         | < 20          |
| TRH >C10-C16                                      | 50   | mg/kg | < 50         | < 50         | < 50         | < 50          |
| TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup> | 50   | mg/kg | < 50         | < 50         | < 50         | < 50          |
| TRH >C16-C34                                      | 100  | mg/kg | < 100        | < 100        | < 100        | 350           |
| TRH >C34-C40                                      | 100  | mg/kg | < 100        | < 100        | < 100        | 520           |
| TRH >C10-C40 (total)*                             | 100  | mg/kg | < 100        | < 100        | < 100        | 870           |
| Polycyclic Aromatic Hydrocarbons                  |      |       |              |              |              |               |
| Benzo(a)pyrene TEQ (lower bound) *                | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5         |
| Benzo(a)pyrene TEQ (medium bound) *               | 0.5  | mg/kg | 0.6          | 0.6          | 0.6          | 0.6           |
| Benzo(a)pyrene TEQ (upper bound) *                | 0.5  | mg/kg | 1.2          | 1.2          | 1.2          | 1.2           |
| Acenaphthene                                      | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5         |
| Acenaphthylene                                    | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5         |
| Anthracene  | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5         |
| Benz(a)anthracene                                 | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5         |
| Benzo(a)pyrene                                    | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5         |
| Benzo(b&j)fluoranthene <sup>N07</sup>             | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5         |
| Benzo(g.h.i)perylene                              | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5         |
| Benzo(k)fluoranthene                              | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5         |
| Chrysene  | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5         |
| Dibenz(a.h)anthracene                             | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5         |
| Fluoranthene                                      | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5         |
| Fluorene  | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5         |
| Indeno(1.2.3-cd)pyrene                            | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5         |



| Client Sample ID                    |      |  | TP04_0.1     | TP05_0.1     | TP05_0.9     | TP06_0.1     |
|-------------------------------------|------|--|--------------|--------------|--------------|--------------|
| Sample Matrix                       |      |  | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.           |      |  | S18-No14966  | S18-No14967  | S18-No14968  | S18-No14969  |
| Date Sampled                        |      |  | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
| Test/Reference                      | LOR  | Unit                                   |              |              |              |              |
| Polycyclic Aromatic Hydrocarbons    | Lon  | Offic                                  |              |              |              |              |
| Nanhthalene                         | 0.5  | ma/ka                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Phenanthrene                        | 0.5  | ma/ka                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Pyrene                              | 0.5  | ma/ka                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Total PAH*                          | 0.5  | ma/ka                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| 2-Fluorobiohenvl (surr.)            | 1    | ////////////////////////////////////// | 88           | 102          | 110          | 88           |
| p-Terphenyl-d14 (surr.)             | 1    | /0<br>%                                | 87           | 1102         | 126          | 92           |
| Organochlorine Pesticides           |      | 70                                     | 01           | 115          | 120          | 52           |
| Chlordonog, Total                   | 0.1  | malka                                  | - 0.1        |              |              |              |
|                                     | 0.1  | mg/kg                                  | < 0.1        | -            | -            | -            |
|                                     | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
|                                     | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
|                                     | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
|                                     | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
|                                     | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
| D-BHC                               | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
|                                     | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
|                                     | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
|                                     | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
|                                     | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
| Endosulfan sulphate                 | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
|                                     | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
| Endrin aldehyde                     | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
| Endrin ketone                       | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
| g-BHC (Lindane)                     | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
| Heptachlor                          | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
| Heptachlor epoxide                  | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
| Hexachlorobenzene                   | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
| Methoxychlor                        | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
| Toxaphene                           | 1    | mg/kg                                  | < 1          | -            | -            | -            |
| Aldrin and Dieldrin (Total)*        | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
| DDT + DDE + DDD (Total)*            | 0.05 | mg/kg                                  | < 0.05       | -            | -            | -            |
| Vic EPA IWRG 621 OCP (Total)*       | 0.1  | mg/kg                                  | < 0.1        | -            | -            | -            |
| Vic EPA IWRG 621 Other OCP (Total)* | 0.1  | mg/kg                                  | < 0.1        | -            | -            | -            |
| Dibutylchlorendate (surr.)          | 1    | %                                      | 79           | -            | -            | -            |
| Tetrachloro-m-xylene (surr.)        | 1    | %                                      | 65           | -            | -            | -            |
| Organophosphorus Pesticides         |      |  |              |              |              |              |
| Azinphos-methyl                     | 0.2  | mg/kg                                  | < 0.2        | -            | -            | -            |
| Bolstar                             | 0.2  | mg/kg                                  | < 0.2        | -            | -            | -            |
| Chlorfenvinphos                     | 0.2  | mg/kg                                  | < 0.2        | -            | -            | -            |
| Chlorpyrifos                        | 0.2  | mg/kg                                  | < 0.2        | -            | -            | -            |
| Chlorpyrifos-methyl                 | 0.2  | mg/kg                                  | < 0.2        | -            | -            | -            |
| Coumaphos                           | 2    | mg/kg                                  | < 2          | -            | -            | -            |
| Demeton-S                           | 0.2  | mg/kg                                  | < 0.2        | -            | -            | -            |
| Demeton-O                           | 0.2  | mg/kg                                  | < 0.2        | -            | -            | -            |
| Diazinon                            | 0.2  | mg/kg                                  | < 0.2        | -            | -            | -            |
| Dichlorvos                          | 0.2  | mg/kg                                  | < 0.2        | -            | -            | -            |
| Dimethoate                          | 0.2  | mg/kg                                  | < 0.2        | -            | -            | -            |
| Disulfoton                          | 0.2  | mg/kg                                  | < 0.2        | -            | -            | -            |
| EPN                                 | 0.2  | mg/kg                                  | < 0.2        | -            | -            | -            |
| Ethion                              | 0.2  | mg/kg                                  | < 0.2        | -            | -            | -            |



| Client Sample ID                                   |      |              | TP04_0.1     | TP05_0.1     | TP05_0.9     | TP06_0.1     |
|--|------|--------------|--------------|--------------|--------------|--------------|
| Sample Matrix                                      |      |              | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.                          |      |              | S18-No14966  | S18-No14967  | S18-No14968  | S18-No14969  |
| Date Sampled                                       |      |              | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
| Test/Reference                                     |      | Linit        |              |              | 101 10, 2010 |              |
| Organophosphorus Pesticides                        | LOR  | Onit         |              |              |              |              |
| Ethonron   | 0.2  | ma/ka        | < 0.2        |              |              |              |
| Ethyl parathion                                    | 0.2  | mg/kg        | < 0.2        | -            |              | -            |
| Enitrothion  | 0.2  | mg/kg        | < 0.2        |              |              |              |
| Fensulfothion                                      | 0.2  | ma/ka        | < 0.2        | _            | _            | _            |
| Fenthion   | 0.2  | ma/ka        | < 0.2        | -            | -            | -            |
| Malathion  | 0.2  | ma/ka        | < 0.2        | -            | -            | -            |
| Merphos  | 0.2  | mg/kg        | < 0.2        | -            | -            | -            |
| Methyl parathion                                   | 0.2  | mg/kg        | < 0.2        | -            | -            | -            |
| Mevinphos  | 0.2  | mg/kg        | < 0.2        | -            | -            | -            |
| Monocrotophos                                      | 2    | mg/kg        | < 2          | -            | -            | -            |
| Naled  | 0.2  | mg/kg        | < 0.2        | -            | -            | -            |
| Omethoate  | 2    | mg/kg        | < 2          | -            | -            | -            |
| Phorate  | 0.2  | mg/kg        | < 0.2        | -            | -            | -            |
| Pirimiphos-methyl                                  | 0.2  | mg/kg        | < 0.2        | -            | -            | -            |
| Pyrazophos   | 0.2  | mg/kg        | < 0.2        | -            | -            | -            |
| Ronnel   | 0.2  | mg/kg        | < 0.2        | -            | -            | -            |
| Terbufos   | 0.2  | mg/kg        | < 0.2        | -            | -            | -            |
| Tetrachlorvinphos                                  | 0.2  | mg/kg        | < 0.2        | -            | -            | -            |
| Tokuthion  | 0.2  | mg/kg        | < 0.2        | -            | -            | -            |
| Trichloronate                                      | 0.2  | mg/kg        | < 0.2        | -            | -            | -            |
| Triphenylphosphate (surr.)                         | 1    | %            | 112          | -            | -            | -            |
| Polychlorinated Biphenyls                          |      | 1            |              |              |              |              |
| Aroclor-1016                                       | 0.1  | mg/kg        | < 0.1        | -            | -            | -            |
| Aroclor-1221                                       | 0.1  | mg/kg        | < 0.1        | -            | -            | -            |
| Aroclor-1232                                       | 0.1  | mg/kg        | < 0.1        | -            | -            | -            |
| Aroclor-1242                                       | 0.1  | mg/kg        | < 0.1        | -            | -            | -            |
| Aroclor-1248                                       | 0.1  | mg/kg        | < 0.1        | -            | -            | -            |
| Aroclor-1254                                       | 0.1  | mg/kg        | < 0.1        | -            | -            | -            |
| Arociol-1200                                       | 0.1  | mg/kg        | < 0.1        | -            | -            | -            |
|  | 1    | 111g/Kg<br>% | 70           |              |              | -            |
| Tetrachloro-m-xylene (surr.)                       | 1    | /0<br>%      | 65           |              |              | _            |
|  |      | 70           | 00           |              |              |              |
| % Clay   | 1    | %            | -            | _            | < 1          | _            |
| Conductivity (1:5 aqueous extract at 25°C as rec.) | 10   | uS/cm        | -            | -            | 12           | -            |
| pH (units)(1:5 soil:CaCl2 extract at 25°C as rec.) | 0.1  | pH Units     | -            | -            | 5.9          | -            |
| Total Organic Carbon                               | 0.1  | %            | -            | -            | 0.1          | -            |
| % Moisture   | 1    | %            | 2.4          | 4.5          | 4.3          | 6.6          |
| Heavy Metals                                       |      |              |              |              |              |              |
| Arsenic  | 2    | mg/kg        | < 2          | < 2          | < 2          | 2.8          |
| Cadmium  | 0.4  | mg/kg        | < 0.4        | < 0.4        | < 0.4        | < 0.4        |
| Chromium   | 5    | mg/kg        | < 5          | < 5          | < 5          | 130          |
| Copper   | 5    | mg/kg        | 8.7          | 5.2          | < 5          | 37           |
| Iron   | 20   | mg/kg        | -            | -            | 360          | -            |
| Lead   | 5    | mg/kg        | 38           | 23           | < 5          | 8.1          |
| Mercury  | 0.1  | mg/kg        | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| Nickel   | 5    | mg/kg        | < 5          | < 5          | < 5          | 130          |
| Zinc   | 5    | mg/kg        | 36           | 23           | < 5          | 86           |
| Heavy Metals                                       |      | 1            |              |              |              |              |
| Iron (%)   | 0.01 | %            |              | -            | 0.04         | -            |



| Client Sample ID          |      |          | TP04_0.1     | TP05_0.1     | TP05_0.9     | TP06_0.1     |
|---------------------------|------|----------|--------------|--------------|--------------|--------------|
| Sample Matrix             |      |          | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No. |      |          | S18-No14966  | S18-No14967  | S18-No14968  | S18-No14969  |
| Date Sampled              |      |          | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
| Test/Reference            | LOR  | Unit     |              |              |              |              |
| Cation Exchange Capacity  |      |          |              |              |              |              |
| Cation Exchange Capacity  | 0.05 | meq/100g | -            | -            | 0.76         | -            |

| Client Sample ID                                 |      |       | TP06_0.3     | TP07_0.1     | TP07_0.4     | TP07_0.6     |
|--|------|-------|--------------|--------------|--------------|--------------|
| Sample Matrix                                    |      |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.                        |      |       | S18-No14970  | S18-No14971  | S18-No14972  | S18-No14973  |
| Date Sampled                                     |      |       | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
| Test/Reference                                   | LOR  | Unit  |              |              |              |              |
| Total Recoverable Hydrocarbons - 1999 NEPM Fract | ions |       |              |              |              |              |
| TRH C6-C9  | 20   | mg/kg | < 20         | < 20         | < 20         | < 20         |
| TRH C10-C14                                      | 20   | mg/kg | < 20         | < 20         | < 20         | < 20         |
| TRH C15-C28                                      | 50   | mg/kg | < 50         | < 50         | < 50         | < 50         |
| TRH C29-C36                                      | 50   | mg/kg | < 50         | < 50         | < 50         | < 50         |
| TRH C10-36 (Total)                               | 50   | mg/kg | < 50         | < 50         | < 50         | < 50         |
| BTEX   |      |       |              |              |              |              |
| Benzene  | 0.1  | mg/kg | -            | < 0.1        | < 0.1        | < 0.1        |
| Toluene  | 0.1  | mg/kg | -            | < 0.1        | < 0.1        | < 0.1        |
| Ethylbenzene                                     | 0.1  | mg/kg | -            | < 0.1        | < 0.1        | < 0.1        |
| m&p-Xylenes                                      | 0.2  | mg/kg | -            | < 0.2        | < 0.2        | < 0.2        |
| o-Xylene   | 0.1  | mg/kg | -            | < 0.1        | < 0.1        | < 0.1        |
| Xylenes - Total                                  | 0.3  | mg/kg | -            | < 0.3        | < 0.3        | < 0.3        |
| 4-Bromofluorobenzene (surr.)                     | 1    | %     | -            | 98           | 114          | 93           |
| Volatile Organics                                |      |       |              |              |              |              |
| 1.1-Dichloroethane                               | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.1-Dichloroethene                               | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.1.1-Trichloroethane                            | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.1.1.2-Tetrachloroethane                        | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.1.2-Trichloroethane                            | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.1.2.2-Tetrachloroethane                        | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.2-Dibromoethane                                | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.2-Dichlorobenzene                              | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.2-Dichloroethane                               | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.2-Dichloropropane                              | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.2.3-1 richloropropane                          | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.2.4-1 rimethylbenzene                          | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
|  | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.3-Dichioropropane                              | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.3.5-Thineunyidenzene                           | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 2 Butenene (MEK)                                 | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 2-Butanone (MER)                                 | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 4 Chlorotoluono                                  | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 4-Chlorololuene<br>4-Methyl-2-pentanone (MIBK)   | 0.5  | mg/kg | < 0.5        |              |              | -            |
| Allyl chloride                                   | 0.5  | mg/kg | < 0.5        |              |              |              |
| Benzene  | 0.5  | mg/kg | < 0.1        |              |              |              |
| Bromobenzene                                     | 0.1  | ma/ka | < 0.5        | -            | _            | -            |
| Bromochloromethane                               | 0.5  | ma/ka | < 0.5        |              | _            | _            |
| Bromodichloromethane                             | 0.5  | ma/ka | < 0.5        | -            | -            | -            |
| Bromoform  | 0.5  | ma/ka | < 0.5        | -            | -            | -            |
|  | 0.0  |       | . 0.0        | 1            | 1            | 1            |



| Client Sample ID                                  |      |         | TP06_0.3     | TP07_0.1     | TP07_0.4     | TP07_0.6     |
|---|------|---------|--------------|--------------|--------------|--------------|
| Sample Matrix                                     |      |         | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.                         |      |         | S18-No14970  | S18-No14971  | S18-No14972  | S18-No14973  |
| Date Sampled                                      |      |         | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
|   | LOR  | l Init  |              |              |              |              |
| Volatile Organics                                 | LOIN | Offic   |              |              |              |              |
| Bromomethane                                      | 0.5  | ma/ka   | < 0.5        | _            | _            | _            |
| Carbon disulfide                                  | 0.5  | ma/ka   | < 0.5        | _            | _            | _            |
| Carbon Tetrachloride                              | 0.5  | ma/ka   | < 0.5        | _            | _            | _            |
| Chlorobenzene                                     | 0.5  | ma/ka   | < 0.5        | -            | -            | -            |
| Chloroethane                                      | 0.5  | ma/ka   | < 0.5        | -            | -            | -            |
| Chloroform  | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| Chloromethane                                     | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| cis-1.2-Dichloroethene                            | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| cis-1.3-Dichloropropene                           | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| Dibromochloromethane                              | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| Dibromomethane                                    | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| Dichlorodifluoromethane                           | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| Ethylbenzene                                      | 0.1  | mg/kg   | < 0.1        | -            | -            | -            |
| Iodomethane                                       | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| Isopropyl benzene (Cumene)                        | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| m&p-Xylenes                                       | 0.2  | mg/kg   | < 0.2        | -            | -            | -            |
| Methylene Chloride                                | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| o-Xylene  | 0.1  | mg/kg   | < 0.1        | -            | -            | -            |
| Styrene   | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| Tetrachloroethene                                 | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| Toluene   | 0.1  | mg/kg   | < 0.1        | -            | -            | -            |
| trans-1.2-Dichloroethene                          | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| trans-1.3-Dichloropropene                         | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| Trichloroethene                                   | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| Trichlorofluoromethane                            | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| Vinyl chloride                                    | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| Xylenes - Total                                   | 0.3  | mg/kg   | < 0.3        | -            | -            | -            |
| Total MAH*  | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| Vic EPA IWRG 621 CHC (Total)*                     | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| Vic EPA IWRG 621 Other CHC (Total)^               | 0.5  | mg/kg   | < 0.5        | -            | -            | -            |
| 4-Bromotiuorobenzene (surr.)                      | 1    | %       | 100          | -            | -            | -            |
| Total Recoverable Hydrocarbons - 2013 NEPM Fract  | ions | 70      | 94           | -            | -            | -            |
| Nonhtholono <sup>N02</sup>                        |      | ~~~//ca | : 0 F        | .05          | - 0 F        | .05          |
|   | 0.5  | mg/kg   | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| TPH C6 C10 locc PTEX (E1) <sup>N04</sup>          | 20   | mg/kg   | < 20         | < 20         | < 20         | < 20         |
| TRH \C10-C16                                      | 50   | mg/kg   | < 50         | < 50         | < 50         | < 20         |
| TRH >C10-C16 less Nanhthalene (E2) <sup>N01</sup> | 50   | ma/ka   | < 50         | < 50         | < 50         | < 50         |
| TRH $>C16-C34$                                    | 100  | ma/ka   | < 100        | < 100        | < 100        | < 100        |
| TRH >C34-C40                                      | 100  | ma/ka   | < 100        | < 100        | < 100        | < 100        |
| TRH >C10-C40 (total)*                             | 100  | ma/ka   | < 100        | < 100        | < 100        | < 100        |
| Polycyclic Aromatic Hydrocarbons                  |      |         |              | . 100        |              |              |
| Benzo(a)pyrene TEQ (lower bound) *                | 0.5  | ma/ka   | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(a)pyrene TEQ (medium bound) *               | 0.5  | ma/ka   | 0.6          | 0.6          | 0.6          | 0.6          |
| Benzo(a)pyrene TEQ (upper bound) *                | 0.5  | ma/ka   | 1.2          | 1.2          | 1.2          | 1.2          |
| Acenaphthene                                      | 0.5  | ma/ka   | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Acenaphthylene                                    | 0.5  | ma/ka   | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Anthracene  | 0.5  | mg/kg   | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benz(a)anthracene                                 | 0.5  | mg/kg   | < 0.5        | < 0.5        | < 0.5        | < 0.5        |



| Client Sample ID                                   |      |          | TP06_0.3     | TP07_0.1     | TP07_0.4     | TP07_0.6     |
|--|------|----------|--------------|--------------|--------------|--------------|
| Sample Matrix                                      |      |          | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.                          |      |          | S18-No14970  | S18-No14971  | S18-No14972  | S18-No14973  |
| Date Sampled                                       |      |          | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
| Test/Reference                                     | LOR  | Unit     |              |              |              |              |
| Polycyclic Aromatic Hydrocarbons                   |      |          |              |              |              |              |
| Benzo(a)pyrene                                     | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(b&j)fluoranthene <sup>N07</sup>              | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(g.h.i)perylene                               | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(k)fluoranthene                               | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Chrysene   | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Dibenz(a.h)anthracene                              | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Fluoranthene                                       | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Fluorene   | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Indeno(1.2.3-cd)pyrene                             | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Naphthalene  | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Phenanthrene                                       | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Pyrene   | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Total PAH*   | 0.5  | mg/kg    | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| 2-Fluorobiphenyl (surr.)                           | 1    | %        | 101          | 90           | 100          | 105          |
| p-Terphenyl-d14 (surr.)                            | 1    | %        | 104          | 98           | 111          | 120          |
|  |      |          |              |              |              |              |
| % Clay   | 1    | %        | -            | -            | < 1          | -            |
| Conductivity (1:5 aqueous extract at 25°C as rec.) | 10   | uS/cm    | -            | -            | 58           | -            |
| pH (units)(1:5 soil:CaCl2 extract at 25°C as rec.) | 0.1  | pH Units | -            | -            | 5.8          | -            |
| Total Organic Carbon                               | 0.1  | %        | -            | -            | 0.6          | -            |
| % Moisture   | 1    | %        | 7.7          | 7.7          | 2.1          | 24           |
| Heavy Metals                                       |      |          |              |              |              |              |
| Arsenic  | 2    | mg/kg    | < 2          | 2.5          | < 2          | < 2          |
| Cadmium  | 0.4  | mg/kg    | < 0.4        | < 0.4        | < 0.4        | < 0.4        |
| Chromium   | 5    | mg/kg    | 13           | 6.4          | < 5          | < 5          |
| Copper   | 5    | mg/kg    | 16           | 8.4          | < 5          | 13           |
| Iron   | 20   | mg/kg    | -            | -            | 1500         | -            |
| Lead   | 5    | mg/kg    | 11           | 17           | 11           | 9.0          |
| Mercury  | 0.1  | mg/kg    | < 0.1        | 1.5          | 0.2          | 0.7          |
| Nickel   | 5    | mg/kg    | 17           | < 5          | < 5          | < 5          |
| Zinc   | 5    | mg/kg    | 26           | 46           | 15           | 20           |
| Heavy Metals                                       |      |          |              |              |              |              |
| Iron (%)   | 0.01 | %        | -            | -            | 0.15         | -            |
| Cation Exchange Capacity                           |      |          |              |              |              |              |
| Cation Exchange Capacity                           | 0.05 | meq/100g | -            | -            | 2.8          | -            |

| Client Sample ID<br>Sample Matrix<br>Eurofins   mgt Sample No.<br>Date Sampled |      |       | TP08_0.4<br>Soil<br>S18-No14974<br>Nov 10, 2018 | TP09_0.3<br>Soil<br>S18-No14975<br>Nov 10, 2018 | TP10_0.1<br>Soil<br>S18-No14976<br>Nov 10, 2018 | TP11_0.2<br>Soil<br>S18-No14977<br>Nov 10, 2018 |
|--|------|-------|---|---|---|---|
| Test/Reference   | LOR  | Unit  |   |   |   |   |
| Total Recoverable Hydrocarbons - 1999 NEPM Fract                               | ions |       |   |   |   |   |
| TRH C6-C9  | 20   | mg/kg | < 20  | < 20  | < 20  | < 20  |
| TRH C10-C14  | 20   | mg/kg | < 20  | < 20  | < 20  | < 20  |
| TRH C15-C28  | 50   | mg/kg | < 50  | < 50  | < 50  | < 50  |
| TRH C29-C36  | 50   | mg/kg | < 50  | < 50  | 91  | < 50  |
| TRH C10-36 (Total)   | 50   | mg/kg | < 50  | < 50  | 91  | < 50  |



| Client Sample ID             |     |          | TP08_0.4     | TP09_0.3     | TP10_0.1     | TP11_0.2     |
|------------------------------|-----|----------|--------------|--------------|--------------|--------------|
| Sample Matrix                |     |          | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.    |     |          | S18-No14974  | S18-No14975  | S18-No14976  | S18-No14977  |
| Date Sampled                 |     |          | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
| Test/Reference               | LOR | Unit     |              |              |              |              |
| BTEX                         | Lon | 01110    |              |              |              |              |
| Benzene                      | 0.1 | ma/ka    | _            | < 0.1        | < 0.1        | < 0.1        |
|                              | 0.1 | ma/ka    | _            | < 0.1        | < 0.1        | < 0.1        |
| Ethylbenzene                 | 0.1 | ma/ka    | _            | < 0.1        | < 0.1        | < 0.1        |
| m&p-Xylenes                  | 0.2 | ma/ka    | -            | < 0.2        | < 0.2        | < 0.2        |
| o-Xvlene                     | 0.1 | ma/ka    | -            | < 0.1        | < 0.1        | < 0.1        |
| Xvlenes - Total              | 0.3 | ma/ka    | -            | < 0.3        | < 0.3        | < 0.3        |
| 4-Bromofluorobenzene (surr.) | 1   | <u>%</u> | -            | 113          | 106          | 103          |
| Volatile Organics            |     | ,,,      |              |              |              |              |
| 1 1-Dichloroethane           | 0.5 | ma/ka    | < 0.5        | _            | _            | _            |
| 1 1-Dichloroethene           | 0.5 | ma/ka    | < 0.5        | _            | _            | _            |
| 1 1 1-Trichloroethane        | 0.5 | ma/ka    | < 0.5        | _            | -            | _            |
| 1 1 1 2-Tetrachloroethane    | 0.5 | ma/ka    | < 0.5        | _            | -            | _            |
| 1 1 2-Trichloroethane        | 0.5 | ma/ka    | < 0.5        | _            | -            | _            |
| 1 1 2 2-Tetrachloroethane    | 0.5 | ma/ka    | < 0.5        | _            | -            | _            |
| 1.2-Dibromoethane            | 0.5 | ma/ka    | < 0.5        | -            | -            | _            |
| 1.2-Dichlorobenzene          | 0.5 | ma/ka    | < 0.5        | -            | -            | _            |
| 1.2-Dichloroethane           | 0.5 | ma/ka    | < 0.5        | -            | -            | _            |
| 1.2-Dichloropropane          | 0.5 | ma/ka    | < 0.5        | -            | -            | -            |
| 1.2.3-Trichloropropane       | 0.5 | ma/ka    | < 0.5        | -            | -            | -            |
| 1.2.4-Trimethylbenzene       | 0.5 | ma/ka    | < 0.5        | -            | -            | -            |
| 1.3-Dichlorobenzene          | 0.5 | ma/ka    | < 0.5        | -            | -            | -            |
| 1.3-Dichloropropane          | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| 1.3.5-Trimethylbenzene       | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| 1.4-Dichlorobenzene          | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| 2-Butanone (MEK)             | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| 2-Propanone (Acetone)        | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| 4-Chlorotoluene              | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| 4-Methyl-2-pentanone (MIBK)  | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| Allyl chloride               | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| Benzene                      | 0.1 | mg/kg    | < 0.1        | -            | -            | -            |
| Bromobenzene                 | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| Bromochloromethane           | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| Bromodichloromethane         | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| Bromoform                    | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| Bromomethane                 | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| Carbon disulfide             | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| Carbon Tetrachloride         | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| Chlorobenzene                | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| Chloroethane                 | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| Chloroform                   | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| Chloromethane                | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| cis-1.2-Dichloroethene       | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| cis-1.3-Dichloropropene      | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| Dibromochloromethane         | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| Dibromomethane               | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| Dichlorodifluoromethane      | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| Ethylbenzene                 | 0.1 | mg/kg    | < 0.1        | -            | -            | -            |
| lodomethane                  | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |
| Isopropyl benzene (Cumene)   | 0.5 | mg/kg    | < 0.5        | -            | -            | -            |



| Client Sample ID                                  |      |  | TP08_0.4     | TP09_0.3     | TP10_0.1     | TP11_0.2     |
|---|------|--|--------------|--------------|--------------|--------------|
| Sample Matrix                                     |      |  | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.                         |      |  | S18-No14974  | S18-No14975  | S18-No14976  | S18-No14977  |
| Date Sampled                                      |      |  | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
| Test/Deference                                    |      | Linit                                  | 100 10, 2010 | 100 10, 2010 | 100 10, 2010 | 100 10, 2010 |
| Veletile Organice                                 | LUK  | Unit                                   |              |              |              |              |
|   | 0.0  |  |              |              |              |              |
| m&p-Xylenes                                       | 0.2  | mg/kg                                  | < 0.2        | -            | -            | -            |
|   | 0.5  | mg/kg                                  | < 0.5        | -            | -            | -            |
| o-xylene  | 0.1  | mg/kg                                  | < 0.1        | -            | -            | -            |
| Tetrachleraethana                                 | 0.5  | mg/kg                                  | < 0.5        | -            | -            | -            |
|   | 0.5  | mg/kg                                  | < 0.5        | -            | -            | -            |
| trans 1.2 Dichlereethene                          | 0.1  | mg/kg                                  | < 0.1        | -            | -            | -            |
| trans 1.3 Dichloropropopo                         | 0.5  | mg/kg                                  | < 0.5        | -            | -            | -            |
|   | 0.5  | mg/kg                                  | < 0.5        | -            | -            | -            |
| Trichlorofluoromethane                            | 0.5  | mg/kg                                  | < 0.5        | -            | -            | _            |
| Vinyl chloride                                    | 0.5  | mg/kg                                  | < 0.5        |              | -            | _            |
| Xvlenes - Total                                   | 0.3  | mg/kg                                  | < 0.3        |              | -            | _            |
| Total MAH*  | 0.5  | ma/ka                                  | < 0.5        | _            | _            | _            |
| Vic EPA IWRG 621 CHC (Total)*                     | 0.5  | ma/ka                                  | < 0.5        | _            | _            | _            |
| Vic EPA IWRG 621 Other CHC (Total)*               | 0.5  | ma/ka                                  | < 0.5        | _            | _            | _            |
| 4-Bromofluorobenzene (surr.)                      | 1    | ////////////////////////////////////// | 103          | _            | _            | _            |
| Toluene-d8 (surr.)                                | 1    | %                                      | 97           | _            | _            | _            |
| Total Recoverable Hydrocarbons - 2013 NEPM Fract  | ions | 70                                     | 01           |              |              |              |
| Naphthalene <sup>N02</sup>                        | 0.5  | ma/ka                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| TRH C6-C10  | 20   | ma/ka                                  | < 20         | < 20         | < 20         | < 20         |
| TRH C6-C10 less BTEX (E1) <sup>N04</sup>          | 20   | ma/ka                                  | < 20         | < 20         | < 20         | < 20         |
| TBH >C10-C16                                      | 50   | ma/ka                                  | < 50         | < 50         | < 50         | < 50         |
| TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup> | 50   | ma/ka                                  | < 50         | < 50         | < 50         | < 50         |
| TRH >C16-C34                                      | 100  | ma/ka                                  | < 100        | < 100        | < 100        | < 100        |
| TRH >C34-C40                                      | 100  | ma/ka                                  | < 100        | < 100        | 150          | < 100        |
| TRH >C10-C40 (total)*                             | 100  | ma/ka                                  | < 100        | < 100        | 150          | < 100        |
| Polycyclic Aromatic Hydrocarbons                  | 1    |  |              |              |              |              |
| Benzo(a)pyrene TEQ (lower bound) *                | 0.5  | ma/ka                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(a)pyrene TEQ (medium bound) *               | 0.5  | ma/ka                                  | 0.6          | 0.6          | 0.6          | 0.6          |
| Benzo(a)pyrene TEQ (upper bound) *                | 0.5  | mg/kg                                  | 1.2          | 1.2          | 1.2          | 1.2          |
| Acenaphthene                                      | 0.5  | ma/ka                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Acenaphthylene                                    | 0.5  | mg/kg                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Anthracene  | 0.5  | mg/kg                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benz(a)anthracene                                 | 0.5  | mg/kg                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(a)pyrene                                    | 0.5  | mg/kg                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(b&j)fluoranthene <sup>N07</sup>             | 0.5  | mg/kg                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(g.h.i)perylene                              | 0.5  | mg/kg                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(k)fluoranthene                              | 0.5  | mg/kg                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Chrysene  | 0.5  | mg/kg                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Dibenz(a.h)anthracene                             | 0.5  | mg/kg                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Fluoranthene                                      | 0.5  | mg/kg                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Fluorene  | 0.5  | mg/kg                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Indeno(1.2.3-cd)pyrene                            | 0.5  | mg/kg                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Naphthalene                                       | 0.5  | mg/kg                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Phenanthrene                                      | 0.5  | mg/kg                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Pyrene  | 0.5  | mg/kg                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Total PAH*  | 0.5  | mg/kg                                  | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| 2-Fluorobiphenyl (surr.)                          | 1    | %                                      | 105          | 100          | 112          | 102          |
| p-Terphenyl-d14 (surr.)                           | 1    | %                                      | 118          | 114          | 129          | 122          |



| Client Sample ID                    |      |       | TP08_0.4     | TP09_0.3     | TP10_0.1     | TP11_0.2     |
|-------------------------------------|------|-------|--------------|--------------|--------------|--------------|
| Sample Matrix                       |      |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.           |      |       | S18-No14974  | S18-No14975  | S18-No14976  | S18-No14977  |
| Date Sampled                        |      |       | Nov 10. 2018 | Nov 10, 2018 | Nov 10. 2018 | Nov 10, 2018 |
| Test/Reference                      | IOP  | Linit |              |              |              |              |
| Organochlorine Besticides           | LOK  | Unit  |              |              |              |              |
| Chlordonoo Totol                    | 0.1  | malka |              |              |              | 101          |
|                                     | 0.1  | mg/kg | -            | -            | -            | < 0.1        |
|                                     | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
|                                     | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| 4.4-001<br>2-BHC                    | 0.05 | mg/kg |              | -            | -            | < 0.05       |
|                                     | 0.05 | ma/ka |              |              | _            | < 0.05       |
| h-BHC                               | 0.05 | mg/kg |              |              | -            | < 0.05       |
| d-BHC                               | 0.05 | mg/kg |              |              | -            | < 0.05       |
| Dieldrin                            | 0.05 | ma/ka | _            | _            | _            | < 0.05       |
|                                     | 0.05 | ma/ka | _            | _            | _            | < 0.05       |
| Endosulfan II                       | 0.05 | ma/ka | _            | _            | _            | < 0.05       |
| Endosulfan sulphate                 | 0.05 | ma/ka | _            | _            | _            | < 0.05       |
| Endrin                              | 0.05 | ma/ka | -            | -            | -            | < 0.05       |
| Endrin aldehyde                     | 0.05 | ma/ka | -            | -            | -            | < 0.05       |
| Endrin ketone                       | 0.05 | ma/ka | -            | -            | -            | < 0.05       |
| g-BHC (Lindane)                     | 0.05 | ma/ka | -            | -            | _            | < 0.05       |
| Heptachlor                          | 0.05 | ma/ka | -            | -            | _            | < 0.05       |
| Heptachlor epoxide                  | 0.05 | ma/ka | -            | -            | _            | < 0.05       |
| Hexachlorobenzene                   | 0.05 | ma/ka | -            | -            | _            | < 0.05       |
| Methoxychlor                        | 0.05 | ma/ka | -            | -            | _            | < 0.05       |
| Toxaphene                           | 1    | mg/kg | -            | -            | -            | < 1          |
| Aldrin and Dieldrin (Total)*        | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| DDT + DDE + DDD (Total)*            | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| Vic EPA IWRG 621 OCP (Total)*       | 0.1  | mg/kg | -            | -            | -            | < 0.1        |
| Vic EPA IWRG 621 Other OCP (Total)* | 0.1  | mg/kg | -            | -            | -            | < 0.1        |
| Dibutylchlorendate (surr.)          | 1    | %     | -            | -            | -            | 70           |
| Tetrachloro-m-xylene (surr.)        | 1    | %     | -            | -            | -            | 73           |
| Organophosphorus Pesticides         |      |       |              |              |              |              |
| Azinphos-methyl                     | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Bolstar                             | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Chlorfenvinphos                     | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Chlorpyrifos                        | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Chlorpyrifos-methyl                 | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Coumaphos                           | 2    | mg/kg | -            | -            | -            | < 2          |
| Demeton-S                           | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Demeton-O                           | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Diazinon                            | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Dichlorvos                          | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Dimethoate                          | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Disulfoton                          | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| EPN                                 | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Ethion                              | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Ethoprop                            | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Ethyl parathion                     | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Fenitrothion                        | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Fensulfothion                       | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Fenthion                            | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Malathion                           | 0.2  | mg/kg | -            | -            | -            | < 0.2        |
| Merphos                             | 0.2  | mg/kg | -            | -            | -            | < 0.2        |



| Client Sample ID             |     |       | TP08_0.4     | TP09_0.3     | TP10_0.1     | TP11_0.2     |
|------------------------------|-----|-------|--------------|--------------|--------------|--------------|
| Sample Matrix                |     |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.    |     |       | S18-No14974  | S18-No14975  | S18-No14976  | S18-No14977  |
| Date Sampled                 |     |       | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
| Test/Reference               | LOR | Unit  |              |              |              |              |
| Organophosphorus Pesticides  |     |       |              |              |              |              |
| Methyl parathion             | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Mevinphos                    | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Monocrotophos                | 2   | mg/kg | -            | -            | -            | < 2          |
| Naled                        | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Omethoate                    | 2   | mg/kg | -            | -            | -            | < 2          |
| Phorate                      | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Pirimiphos-methyl            | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Pyrazophos                   | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Ronnel                       | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Terbufos                     | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Tetrachlorvinphos            | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Tokuthion                    | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Trichloronate                | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Triphenylphosphate (surr.)   | 1   | %     | -            | -            | -            | 104          |
| Polychlorinated Biphenyls    |     |       |              |              |              |              |
| Aroclor-1016                 | 0.1 | mg/kg | -            | -            | -            | < 0.1        |
| Aroclor-1221                 | 0.1 | mg/kg | -            | -            | -            | < 0.1        |
| Aroclor-1232                 | 0.1 | mg/kg | -            | -            | -            | < 0.1        |
| Aroclor-1242                 | 0.1 | mg/kg | -            | -            | -            | < 0.1        |
| Aroclor-1248                 | 0.1 | mg/kg | -            | -            | -            | < 0.1        |
| Aroclor-1254                 | 0.1 | mg/kg | -            | -            | -            | < 0.1        |
| Aroclor-1260                 | 0.1 | mg/kg | -            | -            | -            | < 0.1        |
| Total PCB*                   | 0.1 | mg/kg | -            | -            | -            | < 0.1        |
| Dibutylchlorendate (surr.)   | 1   | %     | -            | -            | -            | 70           |
| Tetrachloro-m-xylene (surr.) | 1   | %     | -            | -            | -            | 73           |
|                              |     |       |              |              |              |              |
| % Moisture                   | 1   | %     | 5.4          | 2.5          | 4.3          | 1.5          |
| Heavy Metals                 |     |       |              |              |              |              |
| Arsenic                      | 2   | mg/kg | < 2          | < 2          | < 2          | < 2          |
| Cadmium                      | 0.4 | mg/kg | < 0.4        | < 0.4        | < 0.4        | < 0.4        |
| Chromium                     | 5   | mg/kg | < 5          | < 5          | < 5          | < 5          |
| Copper                       | 5   | mg/kg | < 5          | < 5          | < 5          | < 5          |
| Lead                         | 5   | mg/kg | 7.3          | 10           | 10           | < 5          |
| Mercury                      | 0.1 | mg/kg | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| Nickel                       | 5   | mg/kg | < 5          | < 5          | < 5          | < 5          |
| Zinc                         | 5   | mg/kg | 10           | 14           | 21           | < 5          |

| Client Sample ID<br>Sample Matrix<br>Eurofins   mgt Sample No.<br>Date Sampled |      | Lipit | TP11_1.2<br>Soil<br>S18-No14978<br>Nov 10, 2018 | TP12_0.2<br>Soil<br>S18-No14979<br>Nov 10, 2018 | QA100<br>Soil<br>S18-No14980<br>Nov 10, 2018 | BH4_0.4<br>Soil<br>S18-No14981<br>Nov 10, 2018 |
|--|------|-------|---|---|--|--|
|  | LUR  | Unit  |   |   |  |  |
| Total Recoverable Hydrocarbons - 1999 NEPM Fract                               | ions |       |   |   |  |  |
| TRH C6-C9  | 20   | mg/kg | < 20  | < 20  | < 20   | < 20   |
| TRH C10-C14  | 20   | mg/kg | < 20  | < 20  | < 20   | < 20   |
| TRH C15-C28  | 50   | mg/kg | 72  | < 50  | < 50   | 370  |
| TRH C29-C36  | 50   | mg/kg | 92  | < 50  | < 50   | 1600   |
| TRH C10-36 (Total)   | 50   | mg/kg | 164   | < 50  | < 50   | 1970   |



| Client Sample ID             |     |       | TP11_1.2     | TP12_0.2     | QA100        | BH4_0.4      |
|------------------------------|-----|-------|--------------|--------------|--------------|--------------|
| Sample Matrix                |     |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.    |     |       | S18-No14978  | S18-No14979  | S18-No14980  | S18-No14981  |
| Date Sampled                 |     |       | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
| Test/Reference               | LOR | Unit  |              |              |              |              |
| BTEX                         | Lon | Offic |              |              |              |              |
| Benzene                      | 0.1 | ma/ka | _            | < 0.1        | _            | < 0.1        |
| Toluene                      | 0.1 | ma/ka | -            | < 0.1        | -            | < 0.1        |
| Ethylbenzene                 | 0.1 | ma/ka | -            | < 0.1        | -            | < 0.1        |
| m&p-Xylenes                  | 0.2 | ma/ka | -            | < 0.2        | -            | < 0.2        |
| o-Xvlene                     | 0.1 | ma/ka | -            | < 0.1        | -            | < 0.1        |
| Xvlenes - Total              | 0.3 | ma/ka | -            | < 0.3        | -            | < 0.3        |
| 4-Bromofluorobenzene (surr.) | 1   | %     | -            | 114          | -            | 112          |
| Volatile Organics            |     |       |              |              |              |              |
| 1.1-Dichloroethane           | 0.5 | ma/ka | < 0.5        | -            | < 0.5        | -            |
| 1.1-Dichloroethene           | 0.5 | ma/ka | < 0.5        | -            | < 0.5        | -            |
| 1.1.1-Trichloroethane        | 0.5 | ma/ka | < 0.5        | -            | < 0.5        | -            |
| 1.1.1.2-Tetrachloroethane    | 0.5 | ma/ka | < 0.5        | -            | < 0.5        | -            |
| 1.1.2-Trichloroethane        | 0.5 | ma/ka | < 0.5        | -            | < 0.5        | -            |
| 1.1.2.2-Tetrachloroethane    | 0.5 | ma/ka | < 0.5        | -            | < 0.5        | -            |
| 1.2-Dibromoethane            | 0.5 | ma/ka | < 0.5        | -            | < 0.5        | -            |
| 1.2-Dichlorobenzene          | 0.5 | ma/ka | < 0.5        | -            | < 0.5        | -            |
| 1.2-Dichloroethane           | 0.5 | ma/ka | < 0.5        | -            | < 0.5        | -            |
| 1.2-Dichloropropane          | 0.5 | ma/ka | < 0.5        | -            | < 0.5        | -            |
| 1.2.3-Trichloropropane       | 0.5 | ma/ka | < 0.5        | -            | < 0.5        | -            |
| 1.2.4-Trimethylbenzene       | 0.5 | ma/ka | < 0.5        | -            | < 0.5        | -            |
| 1.3-Dichlorobenzene          | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| 1.3-Dichloropropane          | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| 1.3.5-Trimethylbenzene       | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| 1.4-Dichlorobenzene          | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| 2-Butanone (MEK)             | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| 2-Propanone (Acetone)        | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| 4-Chlorotoluene              | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| 4-Methyl-2-pentanone (MIBK)  | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Allyl chloride               | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Benzene                      | 0.1 | mg/kg | < 0.1        | -            | < 0.1        | -            |
| Bromobenzene                 | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Bromochloromethane           | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Bromodichloromethane         | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Bromoform                    | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Bromomethane                 | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Carbon disulfide             | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Carbon Tetrachloride         | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Chlorobenzene                | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Chloroethane                 | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Chloroform                   | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Chloromethane                | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| cis-1.2-Dichloroethene       | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| cis-1.3-Dichloropropene      | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Dibromochloromethane         | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Dibromomethane               | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Dichlorodifluoromethane      | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Ethylbenzene                 | 0.1 | mg/kg | < 0.1        | -            | < 0.1        | -            |
| lodomethane                  | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Isopropyl benzene (Cumene)   | 0.5 | mg/kg | < 0.5        | -            | < 0.5        | -            |



| Client Sample ID                                  |      |       | TP11_1.2     | TP12_0.2     | QA100        | BH4_0.4      |
|---|------|-------|--------------|--------------|--------------|--------------|
| Sample Matrix                                     |      |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.                         |      |       | S18-No14978  | S18-No14979  | S18-No14980  | S18-No14981  |
| Date Sampled                                      |      |       | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10. 2018 |
|   | IOP  | Lloit |              |              |              |              |
| Volatile Organics                                 | LOIN | Offic |              |              |              |              |
| m&n-Xylenes                                       | 0.2  | ma/ka | < 0.2        |              | < 0.2        | _            |
| Methylene Chloride                                | 0.2  | ma/ka | < 0.2        | _            | < 0.2        | _            |
|   | 0.0  | ma/ka | < 0.0        | _            | < 0.0        | _            |
| Styrene   | 0.5  | ma/ka | < 0.5        | -            | < 0.5        | -            |
| Tetrachloroethene                                 | 0.5  | ma/ka | < 0.5        | -            | < 0.5        | -            |
| Toluene   | 0.1  | mg/kg | < 0.1        | -            | < 0.1        | -            |
| trans-1.2-Dichloroethene                          | 0.5  | mg/kg | < 0.5        | -            | < 0.5        | -            |
| trans-1.3-Dichloropropene                         | 0.5  | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Trichloroethene                                   | 0.5  | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Trichlorofluoromethane                            | 0.5  | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Vinyl chloride                                    | 0.5  | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Xylenes - Total                                   | 0.3  | mg/kg | < 0.3        | -            | < 0.3        | -            |
| Total MAH*  | 0.5  | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Vic EPA IWRG 621 CHC (Total)*                     | 0.5  | mg/kg | < 0.5        | -            | < 0.5        | -            |
| Vic EPA IWRG 621 Other CHC (Total)*               | 0.5  | mg/kg | < 0.5        | -            | < 0.5        | -            |
| 4-Bromofluorobenzene (surr.)                      | 1    | %     | 102          | -            | 102          | -            |
| Toluene-d8 (surr.)                                | 1    | %     | 99           | -            | 97           | -            |
| Total Recoverable Hydrocarbons - 2013 NEPM Fract  | ions |       |              |              |              |              |
| Naphthalene <sup>N02</sup>                        | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| TRH C6-C10  | 20   | mg/kg | < 20         | < 20         | < 20         | < 20         |
| TRH C6-C10 less BTEX (F1) <sup>N04</sup>          | 20   | mg/kg | < 20         | < 20         | < 20         | < 20         |
| TRH >C10-C16                                      | 50   | mg/kg | < 50         | < 50         | < 50         | < 50         |
| TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup> | 50   | mg/kg | < 50         | < 50         | < 50         | < 50         |
| TRH >C16-C34                                      | 100  | mg/kg | < 100        | < 100        | < 100        | 1200         |
| TRH >C34-C40                                      | 100  | mg/kg | < 100        | < 100        | < 100        | 940          |
| TRH >C10-C40 (total)*                             | 100  | mg/kg | < 100        | < 100        | < 100        | 2140         |
| Polycyclic Aromatic Hydrocarbons                  |      |       |              |              |              |              |
| Benzo(a)pyrene TEQ (lower bound) *                | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | 1.0          |
| Benzo(a)pyrene TEQ (medium bound) *               | 0.5  | mg/kg | 0.6          | 0.6          | 0.6          | 1.3          |
| Benzo(a)pyrene TEQ (upper bound) *                | 0.5  | mg/kg | 1.2          | 1.2          | 1.2          | 1.7          |
| Acenaphthene                                      | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Acenaphthylene                                    | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Anthracene  | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benze(a)anthracene                                | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(a)pyrene                                    | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | 0.9          |
|   | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | 0.0          |
| Benzo(k)fluoranthene                              | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | 0.8          |
| Chrysene  | 0.5  | ma/ka | < 0.5        | < 0.5        | < 0.5        | 0.0          |
| Dibenz(a b)anthracene                             | 0.5  | ma/ka | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Fluoranthene                                      | 0.5  | ma/ka | < 0.5        | < 0.5        | < 0.5        | 0.6          |
| Fluorene  | 0.5  | ma/ka | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Indeno(1.2.3-cd)pyrene                            | 0.5  | ma/ka | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Naphthalene                                       | 0.5  | ma/ka | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Phenanthrene                                      | 0.5  | ma/ka | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Pyrene  | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | 0.5          |
| Total PAH*  | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | 3.4          |
| 2-Fluorobiphenyl (surr.)                          | 1    | %     | 93           | 95           | 107          | 89           |
| p-Terphenyl-d14 (surr.)                           | 1    | %     | 114          | 116          | 130          | 89           |



| Sample Matrix<br>Eurotins (mg) Sample A.NoSig A.Sig  | Client Sample ID                    |      |       | TP11_1.2     | TP12_0.2     | QA100        | BH4_0.4      |
|--|-------------------------------------|------|-------|--------------|--------------|--------------|--------------|
| EuroimageStab.net armStab.net arm  | Sample Matrix                       |      |       | Soil         | Soil         | Soil         | Soil         |
| DetermineLowNov 10, 2018Nov 10, 2018Nov 10, 2018Nov 10, 2018Test/BearniceUnitIntermineNov 10, 2018Nov 10, 2018Nov 10, 2018Chirodrane Fotoine SectionesNov 10, 2018Nov 10, 2018Nov 10, 2018Nov 10, 2018Chirodranes Total0,15mg/kg-0,05<0,05   | Eurofins   mgt Sample No.           |      |       | S18-No14978  | S18-No14979  | S18-No14980  | S18-No14981  |
| TestReference         LOR         Unit         Procession           Organochlorine Presticates         -              Chendrames Total         0.1         mgkg         -         <0.05  | Date Sampled                        |      |       | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
| Organochlorine Pesticides         Image         Im   | Test/Reference                      | LOR  | Unit  |              |              |              | , ,          |
| Chiordanes - Total         0.1         mg/kg         -         <         <          <         <         <         <         <         <            <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <   | Organochlorine Pesticides           | -0.1 | 0     |              |              |              |              |
| 44-10D0       0.05       mg/kg       -       <   | Chlordanes - Total                  | 0.1  | ma/ka | -            | < 0.1        | < 0.1        | -            |
| 44-ODE         0.05         mg/kg         -         < 0.05   | 4.4'-DDD                            | 0.05 | ma/ka | -            | < 0.05       | < 0.05       | -            |
| 44-DDT         0.05         mg/kg         -         <0.05  | 4.4'-DDE                            | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| aBHC         0.06         mg/kg         -         < 0.05         < 0.05         < 0.05           Aldrin         0.06         mg/kg         -         < 0.05  | 4.4'-DDT                            | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| Addin0.05mg/kg-<0.05<0.05<0.05bBHC0.05mg/kg-<0.05  | a-BHC                               | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| bBHC         0.05         mg/kg         -         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05   | Aldrin                              | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| deBrC         0.05         mg/kg         -         < 0.05         < 0.05         < 0.05         < 0.05           Deldrin         0.05         mg/kg         -         < 0.05   | b-BHC                               | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| Deletin         0.05         mg/kg         -         < 0.05         < 0.05         -           Endosulfan II         0.06         mg/kg         -         < 0.05   | d-BHC                               | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| Endosulfan I         0.05         mg/kg         -         < 0.05   | Dieldrin                            | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| Endosulfan II         0.05         mg/kg         -         < 0.05  | Endosulfan I                        | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| Endosulfan sulphate         0.05         mg/kg         -         < 0.06         < 0.06         -           Endrin aldehyde         0.05         mg/kg         -         < 0.05   | Endosulfan II                       | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| Endrin         0.05         mg/kg         -         < < 0.05         < < 0.05         -           Endrin aldehyde         0.05         mg/kg         -         < < 0.05  | Endosulfan sulphate                 | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| Endrin aldehyde         0.06         mg/kg         -         < < 0.05         < < 0.05         -           Endrin ketone         0.05         mg/kg         -         < < 0.05   | Endrin                              | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| Endrin ketone         0.06         mg/kg         -         < <0.05         <0.05         -           g/BHC (Lindane)         0.05         mg/kg         -         < <0.05  | Endrin aldehyde                     | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| g-BHC (Lindane)         0.05         mg/kg         -         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         <<                        | Endrin ketone                       | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| Heptachlor         0.05         mg/kg         -         < < 0.05         < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05         < < 0.05<                        | g-BHC (Lindane)                     | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| Heptachlor epoxide         0.05         mg/kg         -         < 0.05         < 0.05         -           Hexachlorobenzene         0.05         mg/kg         -         < 0.05  | Heptachlor                          | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| Hexachlorobenzene         0.05         mg/kg         -         < 0.05         < 0.05         -           Methoxychlor         0.05         mg/kg         -         < 0.05  | Heptachlor epoxide                  | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| Methoxychlor         0.05         mg/kg         -         < 0.05         < 0.05         -           Toxaphene         1         mg/kg         -         <1   | Hexachlorobenzene                   | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| Toxaphene         1         mg/kg         -         <1   | Methoxychlor                        | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| Aldrin and Dieldrin (Total)*       0.05       mg/kg       -       <0.05  | Toxaphene                           | 1    | mg/kg | -            | < 1          | < 1          | -            |
| DDT + DDE + DDD (Total)*         0.05         mg/kg         -         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.05         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.01         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         < 0.02         <  | Aldrin and Dieldrin (Total)*        | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| Vic EPA IWRG 621 OCP (Total)*       0.1       mg/kg       -       <0.1   | DDT + DDE + DDD (Total)*            | 0.05 | mg/kg | -            | < 0.05       | < 0.05       | -            |
| Vic EPA IWRG 621 Other OCP (Total)*       0.1       mg/kg       -       <0.1   | Vic EPA IWRG 621 OCP (Total)*       | 0.1  | mg/kg | -            | < 0.1        | < 0.1        | -            |
| Dibutychlorendate (surr.)         1         %         -         69         73         -           Tetrachloro-m-xylene (surr.)         1         %         -         67         80         -           Organophosphorus Pesticides              67         80         -           Bolstar         0.2         mg/kg         -         <0.2   | Vic EPA IWRG 621 Other OCP (Total)* | 0.1  | mg/kg | -            | < 0.1        | < 0.1        | -            |
| Tetrachoro-m-xylene (surr.)         1         %         -         67         80         -           Organophosphorus Pesticides                  Azinphos-methyl         0.2         mg/kg         -         <0.2  | Dibutylchlorendate (surr.)          | 1    | %     | -            | 69           | 73           | -            |
| Organophosphorus Pesticides         mg/kg         -         < 0.2         mg/kg         -         < 0.2         0.2         -         < 0.2         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -          < 0.2         -         < 0   | Tetrachloro-m-xylene (surr.)        | 1    | %     | -            | 67           | 80           | -            |
| Azinphos-methyl       0.2       mg/kg       -       < 0.2  | Organophosphorus Pesticides         |      |       |              |              |              |              |
| Boistar         0.2         mg/kg         -         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0  | Azinphos-methyl                     | 0.2  | mg/kg | -            | < 0.2        | < 0.2        | -            |
| Chlordenvinphos         0.2         mg/kg         -         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2  | Bolstar                             | 0.2  | mg/kg | -            | < 0.2        | < 0.2        | -            |
| Chlorpyrifos         0.2         mg/kg         -         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2 <t< td=""><td>Chlorfenvinphos</td><td>0.2</td><td>mg/kg</td><td>-</td><td>&lt; 0.2</td><td>&lt; 0.2</td><td>-</td></t<> | Chlorfenvinphos                     | 0.2  | mg/kg | -            | < 0.2        | < 0.2        | -            |
| Chorpyritos-methyl         0.2         mg/kg         -         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2   |                                     | 0.2  | mg/kg | -            | < 0.2        | < 0.2        | -            |
| Coumapnos         2         mg/kg         -         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <2         <1         <2         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <1         <2         <2         <1   | Chlorpyritos-methyl                 | 0.2  | mg/kg | -            | < 0.2        | < 0.2        | -            |
| Demeton-S         0.2         mg/kg         -         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         <  |                                     | 2    | mg/kg | -            | < 2          | < 2          | -            |
| Demeton-O         0.2         mg/kg         -         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         <  | Demeton-S                           | 0.2  | mg/kg | -            | < 0.2        | < 0.2        | -            |
| Diazinon         0.2         mg/kg         -         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         <   | Demeton-O                           | 0.2  | mg/kg | -            | < 0.2        | < 0.2        | -            |
| Diction Vos       0.2       mg/kg       -       < 0.2  | Diazinon                            | 0.2  | mg/kg | -            | < 0.2        | < 0.2        | -            |
| Dimensional       0.2       mg/kg       -       < 0.2  | Dichlorvos                          | 0.2  | mg/kg | -            | < 0.2        | < 0.2        | -            |
| Distinction       0.2       mg/kg       -       < 0.2  | Dimethoate                          | 0.2  | mg/kg | -            | < 0.2        | < 0.2        | -            |
| EPN       0.2       mg/kg       -       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2       < 0.2 </td <td>EDN</td> <td>0.2</td> <td>mg/kg</td> <td>-</td> <td>&lt; 0.2</td> <td>&lt; 0.2</td> <td>-</td>  | EDN                                 | 0.2  | mg/kg | -            | < 0.2        | < 0.2        | -            |
| Ethoprop         0.2         mg/kg         -         < 0.2         < 0.2         -         < 0.2         < 0.2         -         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2         < 0.2   | Ethion                              | 0.2  | mg/kg | -            | < 0.2        | < 0.2        | -            |
| Entrop         0.2         mg/kg         -         < 0.2         < 0.2         -         < 0.2         < 0.2         -         < 0.2         -         < 0.2         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -          <  | Ethoprop                            | 0.2  | ma/ka | -            | < 0.2        | ~ 0.2        |              |
| Fenitrothion         0.2         mg/kg         -         < 0.2         < 0.2         -         < 0.2         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2          < 0.2         -  | Ethyl parathion                     | 0.2  | ma/ka | -            | < 0.2        | < 0.2        |              |
| Fensulfothion         0.2         mg/kg         -         < 0.2         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -         < 0.2         -          < 0.2         -         < 0.2         - <t< td=""><td>Fenitrothion</td><td>0.2</td><td>ma/ka</td><td>-</td><td>&lt; 0.2</td><td>&lt; 0.2</td><td>_</td></t<>  | Fenitrothion                        | 0.2  | ma/ka | -            | < 0.2        | < 0.2        | _            |
| Fenthion         0.2         mg/kg         -         < 0.2         < 0.2         -           Malathion         0.2         mg/kg         -         < 0.2   | Fensulfothion                       | 0.2  | ma/ka | -            | < 0.2        | < 0.2        |              |
| Malathion         0.2         mg/kg         -         < 0.2         < 0.2         -           Merphos         0.2         mg/kg         -         < 0.2  | Fenthion                            | 0.2  | ma/ka | -            | < 0.2        | < 0.2        | _            |
| Merphos         0.2         mg/kg         -         < 0.2         < 0.2         -  | Malathion                           | 0.2  | ma/ka | -            | < 0.2        | < 0.2        | _            |
|  | Merphos                             | 0.2  | mg/kg | -            | < 0.2        | < 0.2        | -            |



| Client Sample ID                                   |      |          | TP11_1.2     | TP12_0.2     | QA100        | BH4_0.4      |
|--|------|----------|--------------|--------------|--------------|--------------|
| Sample Matrix                                      |      |          | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.                          |      |          | S18-No14978  | S18-No14979  | S18-No14980  | S18-No14981  |
| Date Sampled                                       |      |          | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 | Nov 10, 2018 |
| Test/Reference                                     | LOR  | Unit     |              |              |              |              |
| Organophosphorus Pesticides                        |      |          |              |              |              |              |
| Methyl parathion                                   | 0.2  | ma/ka    | -            | < 0.2        | < 0.2        | _            |
| Mevinphos  | 0.2  | mg/kg    | -            | < 0.2        | < 0.2        | -            |
| Monocrotophos                                      | 2    | ma/ka    | -            | < 2          | < 2          | -            |
| Naled  | 0.2  | mg/kg    | -            | < 0.2        | < 0.2        | -            |
| Omethoate  | 2    | mg/kg    | -            | < 2          | < 2          | -            |
| Phorate  | 0.2  | mg/kg    | -            | < 0.2        | < 0.2        | -            |
| Pirimiphos-methyl                                  | 0.2  | mg/kg    | -            | < 0.2        | < 0.2        | -            |
| Pyrazophos   | 0.2  | mg/kg    | -            | < 0.2        | < 0.2        | -            |
| Ronnel   | 0.2  | mg/kg    | -            | < 0.2        | < 0.2        | -            |
| Terbufos   | 0.2  | mg/kg    | -            | < 0.2        | < 0.2        | -            |
| Tetrachlorvinphos                                  | 0.2  | mg/kg    | -            | < 0.2        | < 0.2        | -            |
| Tokuthion  | 0.2  | mg/kg    | -            | < 0.2        | < 0.2        | -            |
| Trichloronate                                      | 0.2  | mg/kg    | -            | < 0.2        | < 0.2        | -            |
| Triphenylphosphate (surr.)                         | 1    | %        | -            | 96           | 108          | -            |
| Polychlorinated Biphenyls                          |      |          |              |              |              |              |
| Aroclor-1016                                       | 0.1  | mg/kg    | -            | < 0.1        | < 0.1        | -            |
| Aroclor-1221                                       | 0.1  | mg/kg    | -            | < 0.1        | < 0.1        | -            |
| Aroclor-1232                                       | 0.1  | mg/kg    | -            | < 0.1        | < 0.1        | -            |
| Aroclor-1242                                       | 0.1  | mg/kg    | -            | < 0.1        | < 0.1        | -            |
| Aroclor-1248                                       | 0.1  | mg/kg    | -            | < 0.1        | < 0.1        | -            |
| Aroclor-1254                                       | 0.1  | mg/kg    | -            | < 0.1        | < 0.1        | -            |
| Aroclor-1260                                       | 0.1  | mg/kg    | -            | < 0.1        | < 0.1        | -            |
| Total PCB*   | 0.1  | mg/kg    | -            | < 0.1        | < 0.1        | -            |
| Dibutylchlorendate (surr.)                         | 1    | %        | -            | 69           | 73           | -            |
| Tetrachloro-m-xylene (surr.)                       | 1    | %        | -            | 67           | 80           | -            |
|  |      |          |              |              |              |              |
| % Clay   | 1    | %        | -            | < 1          | -            | -            |
| Conductivity (1:5 aqueous extract at 25°C as rec.) | 10   | uS/cm    | -            | 31           | -            | -            |
| pH (units)(1:5 soil:CaCl2 extract at 25°C as rec.) | 0.1  | pH Units | -            | 5.9          | -            | -            |
| Total Organic Carbon                               | 0.1  | %        | -            | 0.7          | -            | -            |
| % Moisture   | 1    | %        | 2.4          | 3.7          | 6.9          | < 1          |
| Heavy Metals                                       |      |          |              |              |              |              |
| Arsenic  | 2    | mg/kg    | < 2          | < 2          | < 2          | < 2          |
| Cadmium  | 0.4  | mg/kg    | < 0.4        | < 0.4        | < 0.4        | < 0.4        |
| Chromium   | 5    | mg/kg    | < 5          | < 5          | < 5          | < 5          |
| Copper   | 5    | mg/kg    | < 5          | < 5          | 11           | 11           |
| Iron   | 20   | mg/kg    | -            | 630          | -            | -            |
| Lead   | 5    | mg/kg    | 19           | 13           | 14           | 13           |
| Mercury  | 0.1  | mg/kg    | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| Nickel   | 5    | mg/kg    | < 5          | < 5          | < 5          | 13           |
| Zinc   | 5    | mg/kg    | 12           | 17           | 15           | 25           |
| Heavy Metals                                       |      |          |              |              |              |              |
| Iron (%)   | 0.01 | %        | -            | 0.06         | -            | -            |
| Cation Exchange Capacity                           |      |          |              |              |              |              |
| Cation Exchange Capacity                           | 0.05 | meq/100g | -            | 1.9          | -            | -            |



| Client Sample ID                                 |      |        | BH05_0.2-0.5 | BH01_1.0-1.45 | BH01_2.5-2.95 | BH01_3.0-3.45 |
|--|------|--------|--------------|---------------|---------------|---------------|
| Sample Matrix                                    |      |        | Soil         | Soil          | Soil          | Soil          |
| Eurofins   mgt Sample No.                        |      |        | S18-No14982  | S18-No14983   | S18-No14984   | S18-No14985   |
| Date Sampled                                     |      |        | Nov 10, 2018 | Nov 10, 2018  | Nov 10, 2018  | Nov 10, 2018  |
| Test/Reference                                   | LOR  | Unit   | ,            | ,             | ,             | ,             |
| Total Recoverable Hydrocarbons - 1999 NEPM Fract | ions | Offic  |              |               |               |               |
|  | 20   | ma/ka  | ~ 20         |               |               | _             |
| TRH C10-C14                                      | 20   | ma/ka  | < 20         | _             | _             | _             |
| TRH C15-C28                                      | 50   | ma/ka  | < 50         | _             | _             | _             |
| TRH C29-C36                                      | 50   | ma/ka  | < 50         | -             | -             | -             |
| TRH C10-36 (Total)                               | 50   | ma/ka  | < 50         | -             | _             | -             |
| Volatile Organics                                |      |        |              |               |               |               |
| 1.1-Dichloroethane                               | 0.5  | ma/ka  | < 0.5        | -             | -             | _             |
| 1.1-Dichloroethene                               | 0.5  | ma/ka  | < 0.5        | -             | -             | -             |
| 1.1.1-Trichloroethane                            | 0.5  | ma/ka  | < 0.5        | -             | -             | -             |
| 1.1.1.2-Tetrachloroethane                        | 0.5  | ma/ka  | < 0.5        | -             | -             | -             |
| 1.1.2-Trichloroethane                            | 0.5  | ma/ka  | < 0.5        | -             | -             | -             |
| 1.1.2.2-Tetrachloroethane                        | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| 1.2-Dibromoethane                                | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| 1.2-Dichlorobenzene                              | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| 1.2-Dichloroethane                               | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| 1.2-Dichloropropane                              | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| 1.2.3-Trichloropropane                           | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| 1.2.4-Trimethylbenzene                           | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| 1.3-Dichlorobenzene                              | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| 1.3-Dichloropropane                              | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| 1.3.5-Trimethylbenzene                           | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| 1.4-Dichlorobenzene                              | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| 2-Butanone (MEK)                                 | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| 2-Propanone (Acetone)                            | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| 4-Chlorotoluene                                  | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| 4-Methyl-2-pentanone (MIBK)                      | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| Allyl chloride                                   | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| Benzene  | 0.1  | mg/kg  | < 0.1        | -             | -             | -             |
| Bromobenzene                                     | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| Bromochloromethane                               | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| Bromodichloromethane                             | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| Bromoform  | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| Bromomethane                                     | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| Carbon disulfide                                 | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| Carbon Tetrachloride                             | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| Chlorobenzene                                    | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| Chloroethane                                     | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| Chloroform                                       | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
|  | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| cis-1.2-Dichloroethene                           | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
|  | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| Dibromocniorometnane                             | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| Diblomomethane                                   | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
|  | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
|  | 0.1  | mg/kg  | < 0.1        | -             | -             | -             |
|  | 0.5  | mg/kg  | < 0.5        | -             | -             | -             |
| m&n-Xulenes                                      | 0.0  | mg/kg  | < 0.5        | -             | -             | -             |
| Methylene Chloride                               | 0.2  | ma/ka  | < 0.2        | -             |               | -             |
|  | 0.0  | ing/kg | L 20.0       | _             | -             |               |



| Client Sample ID                                  |      |       | BH05_0.2-0.5 | BH01_1.0-1.45 | BH01_2.5-2.95 | BH01_3.0-3.45 |
|---|------|-------|--------------|---------------|---------------|---------------|
| Sample Matrix                                     |      |       | Soil         | Soil          | Soil          | Soil          |
| Eurofins   mgt Sample No.                         |      |       | S18-No14982  | S18-No14983   | S18-No14984   | S18-No14985   |
| Date Sampled                                      |      |       | Nov 10, 2018 | Nov 10, 2018  | Nov 10, 2018  | Nov 10, 2018  |
| Test/Reference                                    | LOR  | Unit  |              |               |               |               |
| Volatile Organics                                 | 2011 | 0     |              |               |               |               |
| o-Xvlene  | 0.1  | ma/ka | < 0.1        | _             | _             | _             |
| Styrene   | 0.1  | ma/ka | < 0.5        | _             | _             |               |
| Tetrachloroethene                                 | 0.5  | ma/ka | < 0.5        | -             | -             | _             |
| Toluene   | 0.1  | ma/ka | < 0.1        | -             | -             | -             |
| trans-1.2-Dichloroethene                          | 0.5  | ma/ka | < 0.5        | -             | -             | -             |
| trans-1.3-Dichloropropene                         | 0.5  | ma/ka | < 0.5        | -             | -             | -             |
| Trichloroethene                                   | 0.5  | ma/ka | < 0.5        | -             | -             | -             |
| Trichlorofluoromethane                            | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Vinyl chloride                                    | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Xylenes - Total                                   | 0.3  | mg/kg | < 0.3        | -             | -             | -             |
| Total MAH*  | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Vic EPA IWRG 621 CHC (Total)*                     | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Vic EPA IWRG 621 Other CHC (Total)*               | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| 4-Bromofluorobenzene (surr.)                      | 1    | %     | 102          | -             | -             | -             |
| Toluene-d8 (surr.)                                | 1    | %     | 99           | -             | -             | -             |
| Total Recoverable Hydrocarbons - 2013 NEPM Fract  | ions |       |              |               |               |               |
| Naphthalene <sup>N02</sup>                        | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| TRH C6-C10  | 20   | mg/kg | < 20         | -             | -             | -             |
| TRH C6-C10 less BTEX (F1) <sup>N04</sup>          | 20   | mg/kg | < 20         | -             | -             | -             |
| TRH >C10-C16                                      | 50   | mg/kg | < 50         | -             | -             | -             |
| TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup> | 50   | mg/kg | < 50         | -             | -             | -             |
| TRH >C16-C34                                      | 100  | mg/kg | < 100        | -             | -             | -             |
| TRH >C34-C40                                      | 100  | mg/kg | < 100        | -             | -             | -             |
| TRH >C10-C40 (total)*                             | 100  | mg/kg | < 100        | -             | -             | -             |
| Polycyclic Aromatic Hydrocarbons                  |      |       |              |               |               |               |
| Benzo(a)pyrene TEQ (lower bound) *                | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Benzo(a)pyrene TEQ (medium bound) *               | 0.5  | mg/kg | 0.6          | -             | -             | -             |
| Benzo(a)pyrene TEQ (upper bound) *                | 0.5  | mg/kg | 1.2          | -             | -             | -             |
| Acenaphthene                                      | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Acenaphthylene                                    | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Anthracene  | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Benz(a)anthracene                                 | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Benzo(a)pyrene                                    | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Benzo(b&j)fluoranthene <sup>N07</sup>             | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Benzo(g.h.i)perylene                              | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Benzo(k)fluoranthene                              | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Chrysene  | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Dibenz(a.h)anthracene                             | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Fluoranthene                                      | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Fluorene  | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Indeno(1.2.3-cd)pyrene                            | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Naphthalene                                       | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Phenanthrene                                      | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Pyrene  | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| Total PAH*  | 0.5  | mg/kg | < 0.5        | -             | -             | -             |
| 2-Fluorobiphenyl (surr.)                          | 1    | %     | 99           | -             | -             | -             |
| p-Ierphenyl-d14 (surr.)                           | 1    | %     | 121          | -             | -             | -             |
|   |      |       |              |               |               |               |
| % Moisture  | 1    | %     | 2.5          | -             | -             | -             |



| Client Sample ID<br>Sample Matrix |     |          | BH05_0.2-0.5<br>Soil | BH01_1.0-1.45<br>Soil | BH01_2.5-2.95<br>Soil | BH01_3.0-3.45<br>Soil |
|-----------------------------------|-----|----------|----------------------|-----------------------|-----------------------|-----------------------|
| Eurofins   mgt Sample No.         |     |          | S18-No14982          | S18-No14983           | S18-No14984           | S18-No14985           |
| Date Sampled                      |     |          | Nov 10, 2018         | Nov 10, 2018          | Nov 10, 2018          | Nov 10, 2018          |
| Test/Reference                    | LOR | Unit     |                      |                       |                       |                       |
| Heavy Metals                      |     |          |                      |                       |                       |                       |
| Arsenic                           | 2   | mg/kg    | < 2                  | -                     | -                     | -                     |
| Cadmium                           | 0.4 | mg/kg    | < 0.4                | -                     | -                     | -                     |
| Chromium                          | 5   | mg/kg    | < 5                  | -                     | -                     | -                     |
| Copper                            | 5   | mg/kg    | < 5                  | -                     | -                     | -                     |
| Lead                              | 5   | mg/kg    | < 5                  | -                     | -                     | -                     |
| Mercury                           | 0.1 | mg/kg    | < 0.1                | -                     | -                     | -                     |
| Nickel                            | 5   | mg/kg    | < 5                  | -                     | -                     | -                     |
| Zinc                              | 5   | mg/kg    | < 5                  | -                     | -                     | -                     |
| Acid Sulfate Soils Field pH Test  |     |          |                      |                       |                       |                       |
| pH-F (Field pH test)*             | 0.1 | pH Units | -                    | 6.4                   | 6.3                   | 7.1                   |
| pH-FOX (Field pH Peroxide test)*  | 0.1 | pH Units | -                    | 4.2                   | 4.8                   | 5.7                   |
| Reaction Ratings* <sup>S05</sup>  |     | comment  | -                    | 1.0                   | 1.0                   | 1.0                   |

| Client Sample ID<br>Sample Matrix<br>Eurofins   mgt Sample No.<br>Date Sampled |     |          | BH01_4.0-4.45<br>Soil<br>S18-No14986<br>Nov 10, 2018 | BH01_5.0-5.95<br>Soil<br>S18-No14987<br>Nov 10, 2018 | BH01_7.0-7.45<br>Soil<br>S18-No14988<br>Nov 10, 2018 | BH01_8.0-8.95<br>Soil<br>S18-No14989<br>Nov 10, 2018 |
|--|-----|----------|--|--|--|--|
| Test/Reference   | LOR | Unit     |  |  |  |  |
| Acid Sulfate Soils Field pH Test   |     |          |  |  |  |  |
| pH-F (Field pH test)*  | 0.1 | pH Units | 6.7  | 9.2  | 9.0  | 8.9  |
| pH-FOX (Field pH Peroxide test)*   | 0.1 | pH Units | 5.0  | 7.7  | 5.1  | 4.2  |
| Reaction Ratings*505   |     | comment  | 1.0  | 1.0  | 2.0  | 3.0  |

| Client Sample ID                 |     |          | BH01_10.0-<br>10.45 | BH01_11.0-<br>11.45 | BH01_13.0-<br>13.45 | BH01_14.5-<br>14.95 |
|----------------------------------|-----|----------|---------------------|---------------------|---------------------|---------------------|
| Sample Matrix                    |     |          | Soil                | Soil                | Soil                | Soil                |
| Eurofins   mgt Sample No.        |     |          | S18-No14990         | S18-No14991         | S18-No14992         | S18-No14993         |
| Date Sampled                     |     |          | Nov 10, 2018        | Nov 10, 2018        | Nov 10, 2018        | Nov 10, 2018        |
| Test/Reference                   | LOR | Unit     |                     |                     |                     |                     |
| Acid Sulfate Soils Field pH Test |     |          |                     |                     |                     |                     |
| pH-F (Field pH test)*            | 0.1 | pH Units | 9.2                 | 8.5                 | 8.3                 | 8.2                 |
| pH-FOX (Field pH Peroxide test)* | 0.1 | pH Units | 4.3                 | 7.1                 | 5.2                 | 5.8                 |
| Reaction Ratings* <sup>S05</sup> |     | comment  | 3.0                 | 1.0                 | 4.0                 | 1.0                 |

| Client Sample ID<br>Sample Matrix<br>Eurofins   mgt Sample No.<br>Date Sampled |     |          | BH01_16.0-<br>16.45<br>Soil<br>S18-No14994<br>Nov 10, 2018 | BH04_0.5-0.95<br>Soil<br>S18-No14995<br>Nov 10, 2018 | BH04_2.0-2.45<br>Soil<br>S18-No14996<br>Nov 10, 2018 | BH04_3.0-3.45<br>Soil<br>S18-No14997<br>Nov 10, 2018 |
|--|-----|----------|--|--|--|--|
| Test/Reference   | LOR | Unit     |  |  |  |  |
| Acid Sulfate Soils Field pH Test   |     |          |  |  |  |  |
| pH-F (Field pH test)*  | 0.1 | pH Units | 6.9  | 6.2  | 4.9  | 5.5  |
| pH-FOX (Field pH Peroxide test)*   | 0.1 | pH Units | 3.1  | 3.9  | 3.3  | 3.4  |
| Reaction Ratings* <sup>S05</sup>   |     | comment  | 2.0  | 1.0  | 1.0  | 1.0  |


| Client Sample ID<br>Sample Matrix<br>Eurofins   mgt Sample No.<br>Date Sampled |     |          | BH05_1.5-1.95<br>Soil<br>S18-No14998<br>Nov 10, 2018 | BH05_4.5-4.95<br>Soil<br>S18-No14999<br>Nov 10, 2018 |
|--|-----|----------|--|--|
| Test/Reference   | LOR | Unit     |  |  |
| Acid Sulfate Soils Field pH Test   |     |          |  |  |
| pH-F (Field pH test)*  | 0.1 | pH Units | 5.6  | 6.5  |
| pH-FOX (Field pH Peroxide test)*   | 0.1 | pH Units | 3.5  | 5.0  |
| Reaction Ratings* <sup>S05</sup>   |     | comment  | 1.0  | 1.0  |



# Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

mgt

| Description  | Testing Site | Extracted    | Holding Time |
|--|--------------|--------------|--------------|
| Eurofins   mgt Suite B8  |              |              |              |
| Total Recoverable Hydrocarbons - 1999 NEPM Fractions                                       | Melbourne    | Nov 15, 2018 | 14 Day       |
| - Method: LTM-ORG-2010 TRH C6-C40  |              |              |              |
| Volatile Organics  | Melbourne    | Nov 15, 2018 | 7 Days       |
| - Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices                     |              |              |              |
| Total Recoverable Hydrocarbons - 2013 NEPM Fractions                                       | Melbourne    | Nov 15, 2018 | 14 Day       |
| - Method: LTM-ORG-2010 TRH C6-C40  |              |              |              |
| Total Recoverable Hydrocarbons - 2013 NEPM Fractions                                       | Melbourne    | Nov 15, 2018 | 14 Day       |
| - Method: LTM-ORG-2010 TRH C6-C40  |              |              |              |
| Polycyclic Aromatic Hydrocarbons   | Melbourne    | Nov 15, 2018 | 14 Day       |
| - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water                                   |              |              |              |
| Metals M8  | Melbourne    | Nov 15, 2018 | 28 Days      |
| - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS                       |              |              |              |
| Eurofins   mgt Suite B7  |              |              |              |
| BTEX   | Melbourne    | Nov 15, 2018 | 14 Day       |
| - Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices                     |              |              |              |
| Eurofins   mgt Suite B15   |              |              |              |
| Organochlorine Pesticides  | Melbourne    | Nov 15, 2018 | 14 Day       |
| - Method: LTM-ORG-2220 OCP & PCB in Soil and Water   |              |              |              |
| Organophosphorus Pesticides  | Melbourne    | Nov 15, 2018 | 14 Day       |
| - Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS                                |              |              |              |
| Polychlorinated Biphenyls  | Melbourne    | Nov 15, 2018 | 28 Days      |
| - Method: LTM-ORG-2220 OCP & PCB in Soil and Water   |              |              |              |
| NEPM Screen for Soil Classification  |              |              |              |
| % Clay   | Brisbane     | Nov 15, 2018 | 6 Day        |
| - Method: LTM-GEN-7040   |              |              |              |
| Conductivity (1:5 aqueous extract at 25°C as rec.)   | Melbourne    | Nov 15, 2018 | 7 Day        |
| - Method: LTM-INO-4030 Conductivity  |              |              |              |
| pH (units)(1:5 soil:CaCl2 extract at 25°C as rec.)   | Melbourne    | Nov 15, 2018 | 7 Day        |
| - Method: LTM-GEN-7090 pH in soil by ISE   |              |              |              |
| Total Organic Carbon   | Melbourne    | Nov 17, 2018 | 28 Day       |
| - Method: APHA 5310B Total Organic Carbon  |              |              | -            |
| Heavy Metals   | Melbourne    | Nov 15, 2018 | 180 Day      |
| - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS                       |              |              |              |
| Cation Exchange Capacity   | Melbourne    | Nov 16, 2018 | 180 Days     |
| - Method: LTM-MET-3060 Cation Exchange Capacity by bases & Exchangeable Sodium Percentage  |              |              |              |
| % Moisture   | Melbourne    | Nov 12, 2018 | 14 Day       |
| - Method: LTM-GEN-7080 Moisture  |              |              | -            |
| Acid Sulfate Soils Field pH Test   | Brisbane     | Nov 12, 2018 | 7 Days       |
| - Method: LTM-GEN-7060 Determination of field pH (pHF) and field pH peroxide (pHFOX) tests |              |              |              |

|          | eurofins mgt ABN- 50 00<br>e.mail : Env<br>web : www.            |  |                                |                       |             | 5 085 521<br>oSales@eurofins.com<br>urofins.com.au |                      |                               |                                  | Melbourne<br>2-5 Kingston Town Close<br>Oakleigh VIC 3166<br>Phone : +61 3 8564 5000<br>NATA # 1261<br>Site # 1254 & 14271 |                          |                                     | <b>Syd</b><br>Unit<br>16 M<br>Land<br>Pho<br>NAT | Iney<br>t F3, Building F<br>Mars Road<br>he Cove West NSW 2066<br>no: +61 2 9900 8400<br>TA # 1261 Site # 18217 | Brisbane<br>1/21 Smallwood Place<br>Murarrie QLD 4172<br>Phone : +61 7 3902 4600<br>NATA # 1261 Site # 2079 | Perth           2/91 Leach Highway           Kewdale WA 6105           0         Phone : +61 8 9251 9600           94         NATA # 1261           Site # 23736 |   |
|----------|--|--|--------------------------------|-----------------------|-------------|--|----------------------|-------------------------------|----------------------------------|--|--------------------------|-------------------------------------|--|---|---|--|---|
| Co       | mpany Name:<br>dress:  | Cardno (NSV<br>Level 9, 203<br>St Leonards<br>NSW 2065 | V/ACT) Pty Lt<br>Pacific Highw | id<br>vay             |             |  | Or<br>Re<br>Ph<br>Fa | der N<br>port #<br>one:<br>x: | o.:<br>#:                        | 62<br>02<br>02   | 27289<br>29496<br>2 9499 | )<br>57700<br>9 390                 | 2  |   |   | Received:<br>Due:<br>Priority:<br>Contact Name:  | Nov 12, 2018 4:31 PM<br>Nov 19, 2018<br>5 Day<br>Ben Withnall |
| Pr<br>Pr | oject Name:<br>oject ID:   | KYEEMAGH<br>80818157                                   | INFANTS SC                     | CHOOL                 |             |  |                      |                               |                                  |  |                          |                                     |  |   | Eurofi  | ns   mgt Analytical Se   | rvices Manager : Nibha Vaidya                                 |
|          | Sample Detail<br>Melbourne Laboratory - NATA Site # 1254 & 14271 |  |                                |                       |             |  |                      | HOLD                          | Acid Sulfate Soils Field pH Test | Eurofins   mgt Suite B15   | Moisture Set             | NEPM Screen for Soil Classification | Eurofins   mgt Suite B7                          | Eurofins   mgt Suite B8   |   |  |   |
| Melt     | ourne Laborate   | ory - NATA Site  | # 1254 & 142                   | 271                   |             |  |                      | х                             |                                  | х  | Х                        | Х                                   | х  | х   |   |  |   |
| Syd      | ney Laboratory   | - NATA Site # 1  | 8217                           |                       |             | Х  | Х                    |                               |                                  |  |                          |                                     |  |   |   |  |   |
| Bris     | bane Laborator   | y - NATA Site #  | 20794                          |                       |             |  |                      |                               | Х                                | ļ'   |                          | Х                                   |  |   |   |  |   |
| Pert     | h Laboratory - N   | NATA Site # 237  | 36                             |                       |             |  |                      |                               |                                  | ļ'   |                          |                                     |  |   |   |  |   |
| Exte     | rnal Laboratory  | l<br>Dominika Dotta                                    | 0                              |                       |             |  |                      |                               |                                  | !  |                          |                                     |  |   | -   |  |   |
| NO       | Sample ID  | Sample Date  | Time                           | Watrix                |             |  |                      |                               |                                  |  |                          |                                     |  |   |   |  |   |
| 1        | TP03_0.2   | Nov 10, 2018   |                                | Soil                  | S18-No14957 | Х  |                      |                               |                                  | X  | Х                        |                                     | Х  |   |   |  |   |
| 2        | TP03_1.2   | Nov 10, 2018   |                                | Soil                  | S18-No14958 | X  |                      |                               |                                  | <b>├</b> ── <sup> </sup>   | Х                        |                                     |  | X   |   |  |   |
| 3        | TP03_ASB1  | Nov 10, 2018   |                                | Building<br>Materials | S18-No14959 |  | Х                    |                               |                                  |  |                          |                                     |  |   |   |  |   |
| 4        | TP19_0.1   | Nov 10, 2018   |                                | Soil                  | S18-No14960 | Х  |                      |                               |                                  |  | х                        |                                     | х  |   |   |  |   |
| 5        | TP19_0.3   | Nov 10, 2018   |                                | Soil                  | S18-No14961 | Х  |                      |                               |                                  |  | Х                        |                                     | Х  |   |   |  |   |
| 6        | TP01_0.2   | Nov 10, 2018   |                                | Soil                  | S18-No14962 | Х  |                      |                               |                                  |  | Х                        |                                     | х  |   | ļ   |  |   |
| 7        | TP01_0.9   | Nov 10, 2018   |                                | Soil                  | S18-No14963 |  |                      |                               |                                  |  | х                        |                                     | х  |   | ļ   |  |   |
| 8        | TP02_0.1   | Nov 10, 2018   |                                | Soil                  | S18-No14964 | Х  |                      |                               |                                  | X  | Х                        |                                     | Х  |   |   |  |   |
| 9        | TP02_0.4   | Nov 10, 2018   |                                | Soil                  | S18-No14965 | Х  |                      |                               |                                  |  | Х                        |                                     | Х  |   | ]   |  |   |

|            | 🔅 eurofins   mgt         |   |                  |             | ABN– 50 005 085 521<br>e.mail : EnviroSales@eurofins.com<br>web : www.eurofins.com.au |                      |                                       |                                  | Melbourne<br>2-5 Kingston Town Close<br>Oakleigh VIC 3166<br>Phone : +61 3 8564 5000<br>NATA # 1261<br>Site # 1254 & 14271 |                         |                                     | e<br>10                 | <b>Syc</b><br>Uni<br>16 I<br>Lan<br>Pho<br>NA | Iney<br>IF3, Building F<br>Mars Road<br>he Cove West NSW 2066<br>one : +61 2 9900 8400<br>TA # 1261 Site # 18217 | Brisbane<br>1/21 Smallwood Place<br>Murarrie QLD 4172<br>Phone : +61 7 3902 460<br>NATA # 1261 Site # 207 | Perth<br>2/91 Leach Highway<br>Kewdale WA 6105<br>0 Phone: +61 8 9251 9600<br>94 NATA # 1261<br>Site # 23736 |
|------------|--------------------------|---|------------------|-------------|---|----------------------|---------------------------------------|----------------------------------|--|-------------------------|-------------------------------------|-------------------------|---|--|---|--|
| Co<br>Ad   | mpany Name:<br>dress:    | Cardno (NSW/ACT) P<br>Level 9, 203 Pacific H<br>St Leonards<br>NSW 2065 | ty Ltd<br>ighway |             |   | Or<br>Re<br>Ph<br>Fa | der Neport #<br>port #<br>none:<br>x: | o.:<br>#:                        | 6:<br>0:<br>0:   | 27289<br>2949€<br>2 949 | )<br>67700<br>9 390                 | 2                       |   |  | Received:<br>Due:<br>Priority:<br>Contact Name:   | Nov 12, 2018 4:31 PM<br>Nov 19, 2018<br>5 Day<br>Ben Withnall  |
| Pro<br>Pro | iject Name:<br>iject ID: | KYEEMAGH INFANT<br>80818157   | S SCHOOL         |             |   |                      |                                       |                                  |  |                         |                                     |                         |   | Eurofir  | ns   mgt Analytical Se  | rvices Manager : Nibha Vaidya  |
|            | Sample Detail            |   |                  |             |   |                      | HOLD                                  | Acid Sulfate Soils Field pH Test | Eurofins   mgt Suite B15   | Moisture Set            | NEPM Screen for Soil Classification | Eurofins   mgt Suite B7 | Eurofins   mgt Suite B8                       |  |   |  |
| Melb       | ourne Laborato           | ory - NATA Site # 1254 &  | 14271            |             |   |                      | Х                                     |                                  | Х  | Х                       | х                                   | Х                       | Х   |  |   |  |
| Sydr       | ey Laboratory            | - NATA Site # 18217   |                  |             | Х   | Х                    |                                       |                                  |  |                         |                                     |                         |   |  |   |  |
| Brist      | ane Laboratory           | y - NATA Site # 20794   |                  |             |   |                      |                                       | Х                                |  |                         | Х                                   |                         |   |  |   |  |
| Pert       | Laboratory - N           | NATA Site # 23736   |                  |             |   |                      |                                       |                                  |  | <u> </u>                |                                     |                         |   | -  |   |  |
| 10         | TP04_0.1                 | Nov 10, 2018  | Soil             | S18-No14966 | Х   |                      |                                       |                                  | Х  | X                       |                                     | X                       |   | -  |   |  |
| 11         | TP05_0.1                 | Nov 10, 2018  | Soil             | S18-No14967 | Х   |                      |                                       |                                  |  | X                       |                                     | X                       |   | {  |   |  |
| 12         | TP05_0.9                 | Nov 10, 2018  | Soil             | S18-No14968 | ×   |                      |                                       |                                  |  |                         | X                                   |                         | X   | {  |   |  |
| 13         | TP06_0.1                 | Nov 10, 2018  | Soll             | S18-N014969 | X   |                      |                                       |                                  |  |                         |                                     |                         | ~   | {  |   |  |
| 14         | TP07_0_1                 | Nov 10, 2018  | Soil             | S18-N014970 | v   |                      |                                       |                                  |  |                         |                                     | v                       | ^   | 1  |   |  |
| 16         | TP07_0.1                 | Nov 10, 2018  | Soil             | S18-No1/072 |   | -                    |                                       |                                  | <u> </u>   | ×                       | x                                   | x                       |   | 1  |   |  |
| 17         | TP07_0.4                 | Nov 10, 2018  | Soil             | S18-No14973 |   |                      |                                       |                                  |  | X                       |                                     | x                       |   | 1  |   |  |
| 18         | TP08_0.4                 | Nov 10, 2018  | Soil             | S18-No14974 |   |                      |                                       |                                  |  | x                       |                                     |                         | x   | 1  |   |  |
| 19         | TP09 0.3                 | Nov 10, 2018  | Soil             | S18-No14975 | x   |                      |                                       |                                  |  | x                       |                                     | x                       |   | 1  |   |  |
| 20         | TP10 0.1                 | Nov 10, 2018  | Soil             | S18-No14976 |   |                      |                                       |                                  |  | X                       |                                     | x                       |   | 1  |   |  |
|            |                          |   |                  | 1           |   |                      | -                                     |                                  |  |                         |                                     | 1                       |   |  |   |  |

|            | 🔅 eur                    | ABN– 50 005 085 521<br>e.mail : EnviroSales@eurofins.com<br>web : www.eurofins.com.au |                    |             |          | M<br>2-<br>O<br>PI<br>N<br>Si | Melbourne<br>2-5 Kingston Town Close<br>Oakleigh VIC 3166<br>Phone : +61 3 8564 5000<br>NATA # 1261<br>Site # 1254 & 14271 |                                  |                          | e<br>10                 | <b>Syc</b><br>Uni<br>16 I<br>Lar<br>Pho<br>NA | Iney<br>If F3, Building F<br>Mars Road<br>he Cove West NSW 2066<br>one : +61 2 9900 8400<br>TA # 1261 Site # 18217 | Brisbane<br>1/21 Smallwood Place<br>Murarrie QLD 4172<br>Phone : +61 7 3902 460<br>NATA # 1261 Site # 207 | Perth           2/91 Leach Highway           Kewdale WA 6105           0         Phone : +61 8 9251 9600           94         NATA # 1261           Site # 23736 |   |   |
|------------|--------------------------|---|--------------------|-------------|----------|-------------------------------|--|----------------------------------|--------------------------|-------------------------|---|--|---|--|---|---|
| Co<br>Ad   | mpany Name:<br>dress:    | Cardno (NSW/ACT)<br>Level 9, 203 Pacific<br>St Leonards<br>NSW 2065                   | Pty Ltd<br>Highway |             |          | Or<br>Re<br>Ph<br>Fa          | der No<br>eport #<br>ione:<br>ix:  | 0.:<br>!:                        | 62<br>02<br>02           | 27289<br>29496<br>2 949 | )<br>67700<br>9 390                           | 2  |   |  | Received:<br>Due:<br>Priority:<br>Contact Name: | Nov 12, 2018 4:31 PM<br>Nov 19, 2018<br>5 Day<br>Ben Withnall |
| Pro<br>Pro | oject Name:<br>oject ID: | KYEEMAGH INFAN<br>80818157  | TS SCHOOL          |             |          |                               |  |                                  |                          |                         |   |  |   | Eurofi   | ns   mgt Analytical Se                          | rvices Manager : Nibha Vaidya                                 |
|            | Sample Detail            |   |                    |             |          |                               | НОГД   | Acid Sulfate Soils Field pH Test | Eurofins   mgt Suite B15 | Moisture Set            | NEPM Screen for Soil Classification           | Eurofins   mgt Suite B7  | Eurofins   mgt Suite B8   |  |   |   |
| Melb       | ourne Laborato           | ry - NATA Site # 1254   | & 14271            |             |          |                               | Х  |                                  | х                        | Х                       | Х   | Х  | Х   |  |   |   |
| Sydr       | ey Laboratory            | - NATA Site # 18217   |                    |             | х        | х                             |  |                                  |                          |                         |   |  |   |  |   |   |
| Bris       | pane Laboratory          | / - NATA Site # 20794   |                    |             |          |                               |  | Х                                |                          |                         | Х   |  |   | -  |   |   |
| Perti      | Laboratory - N           | ATA Site # 23736  |                    |             |          |                               |  |                                  |                          |                         |   |  |   | -  |   |   |
| 22         | TP11_1.2                 | Nov 10, 2018  | Soil               | S18-No14978 |          |                               |  |                                  |                          | Х                       |   |  | Х   | -  |   |   |
| 23         | TP12_0.2                 | Nov 10, 2018  | Soil               | S18-No14979 | X        |                               |  |                                  | X                        | X                       | Х   | X  |   | 4  |   |   |
| 24         |                          | Nov 10, 2018  | Soil               | S18-No14980 | <u> </u> |                               |  |                                  | X                        | X                       |   |  | X   | -  |   |   |
| 25         |                          | Nov 10, 2018  | Soil               | S18-No14981 | -        |                               |  |                                  |                          | X                       |   | <u> </u>   | ×   | -  |   |   |
| 20         | BH01 1 0-1 /5            | Nov 10, 2010  | Soil               | S18-No14982 |          |                               |  | x                                |                          |                         |   |  |   | 1  |   |   |
| 28         | BH01 2 5-2 95            | Nov 10, 2018  | Soil               | S18-No14984 |          |                               |  | X                                |                          |                         |   |  |   | 1  |   |   |
| 29         | BH01 3.0-3.45            | Nov 10, 2018  | Soil               | S18-No14985 |          |                               |  | X                                |                          |                         |   |  |   | 1  |   |   |
| 30         | BH01_4.0-4.45            | Nov 10, 2018  | Soil               | S18-No14986 |          |                               |  | Х                                |                          |                         |   |  |   | 1  |   |   |
| 31         | BH01_5.0-5.95            | Nov 10, 2018  | Soil               | S18-No14987 |          |                               |  | Х                                |                          |                         |   | 1  |   | 1  |   |   |
| 32         | BH01_7.0-7.45            | Nov 10, 2018  | Soil               | S18-No14988 |          |                               |  | Х                                |                          |                         |   |  |   | 1  |   |   |
| 33         | BH01_8.0-8.95            | Nov 10, 2018  | Soil               | S18-No14989 |          |                               |  | Х                                |                          |                         |   |  |   | ]  |   |   |

|          | eurofins mgt                            |  |                                   |     | ABN– 50 005 085 521<br>e.mail : EnviroSales@eurofins.com<br>web : www.eurofins.com.au |   |                            |                                 | <b>M</b><br>2-<br>0<br>P<br>N<br>Si | Melbourne<br>2-5 Kingston Town Close<br>Oakleigh VIC 3166<br>Phone : +61 3 8564 5000<br>NATA # 1261<br>Site # 1254 & 14271 |                         | <b>Syc</b><br>Uni<br>16 I<br>Lan<br>Pho<br>NA | <b>Iney</b><br>It F3, Building F<br>Mars Road<br>he Cove West NSW 2066<br>one : +61 2 9900 8400<br>TA # 1261 Site # 18217 | Brisbane<br>1/21 Smallwood Place<br>Murarrie QLD 4172<br>Phone : +61 7 3902 460<br>NATA # 1261 Site # 207 | Perth           2/91 Leach Highway           Kewdale WA 6105           0         Phone : +61 8 9251 9600           94         NATA # 1261           Site # 23736 |   |   |
|----------|---|--|-----------------------------------|-----|---|---|----------------------------|---------------------------------|-------------------------------------|--|-------------------------|---|---|---|--|---|---|
| Co<br>Ao | ompany Name:<br>Idress:                 | Cardno (NSV<br>Level 9, 203<br>St Leonards<br>NSW 2065 | V/ACT) Pty Ltd<br>Pacific Highway |     |   |   | Or<br>Re<br>Ph<br>Fa       | der Ne<br>port #<br>ione:<br>x: | 0.:<br>#:                           | 6:<br>0:<br>0:   | 27289<br>29496<br>2 949 | )<br>67700<br>9 390                           | 2   |   |  | Received:<br>Due:<br>Priority:<br>Contact Name: | Nov 12, 2018 4:31 PM<br>Nov 19, 2018<br>5 Day<br>Ben Withnall |
| Pr<br>Pr | oject Name:<br>oject ID:                | KYEEMAGH<br>80818157                                   | INFANTS SCH                       | OOL |   |   |                            |                                 |                                     |  |                         |   |   |   | Eurofi   | ns   mgt Analytical Se                          | rvices Manager : Nibha Vaidya                                 |
|          | Sample Detail                           |  |                                   |     |   |   | Asbestos Absence /Presence | рор                             | Acid Sulfate Soils Field pH Test    | Eurofins   mgt Suite B15   | Moisture Set            | NEPM Screen for Soil Classification           | Eurofins   mgt Suite B7   | Eurofins   mgt Suite B8   |  |   |   |
| Mell     | oourne Laborato                         | ory - NATA Site  | # 1254 & 14271                    |     |   |   |                            | Х                               |                                     | х  | Х                       | Х   | Х   | х   | ]  |   |   |
| Syd      | ney Laboratory                          | - NATA Site # 1  | 8217                              |     |   | Х | х                          |                                 |                                     |  |                         |   |   |   | -  |   |   |
| Bris     | bane Laboratory                         | / - NATA Site #  | 20794                             |     |   |   |                            |                                 | Х                                   |  |                         | X   |   |   | -  |   |   |
| 34       | h Laboratory - N<br>BH01_10.0-<br>10.45 | Nov 10, 2018   | 36<br>So                          | oil | S18-No14990   |   |                            |                                 | х                                   |  |                         |   |   |   |  |   |   |
| 35       | BH01_11.0-<br>11.45                     | Nov 10, 2018   | S                                 | oil | S18-No14991   |   |                            |                                 | х                                   |  |                         |   |   |   |  |   |   |
| 36       | BH01_13.0-<br>13.45                     | Nov 10, 2018   | S                                 | oil | S18-No14992   |   |                            |                                 | х                                   |  |                         |   |   |   |  |   |   |
| 37       | BH01_14.5-<br>14.95                     | Nov 10, 2018   | S                                 | oil | S18-No14993   |   |                            |                                 | х                                   |  |                         |   |   |   | -  |   |   |
| 38       | BH01_16.0-<br>16.45                     | Nov 10, 2018   | S                                 | oil | S18-No14994   |   |                            |                                 | х                                   |  |                         |   |   |   |  |   |   |
| 39       | BH04_0.5-0.95                           | Nov 10, 2018   | S                                 | oil | S18-No14995   |   |                            |                                 | Х                                   |  |                         |   |   |   | -  |   |   |
| 40       | BH04_2.0-2.45                           | Nov 10, 2018   | S                                 | oil | S18-No14996   |   |                            |                                 | Х                                   |  |                         |   |   |   | -  |   |   |
| 41       | BH04_3.0-3.45                           | Nov 10, 2018   | S                                 | oil | S18-No14997   |   |                            |                                 | Х                                   |  |                         |   |   | <u> </u>  |  |   |   |
| 42       | BH05_1.5-1.95                           | Nov 10, 2018   | S                                 | oil | S18-No14998   |   |                            |                                 | Х                                   |  |                         |   |   |   | ]  |   |   |

|                              | eurofins mgt ABN-50 00-<br>e.mail : Envi<br>web : www.e  |                |                |            |             | 085 521<br>oSales@eurofins.com<br>ırofins.com.au |                             |                               |                                  | Melbourne<br>2-5 Kingston Town Close<br>Oakleigh VIC 3166<br>Phone: +61 3 8564 5000<br>NATA # 1261<br>Site # 1254 & 14271 |                          |                                     | <b>Syc</b><br>Uni<br>16<br>Lar<br>Pho<br>NA | dney<br>it F3, Building F<br>Mars Road<br>ne Cove West NSW 2066<br>one : +61 2 9900 8400<br>TA # 1261 Site # 18217 | Brisbane<br>1/21 Smallwood Place<br>Murarrie QLD 4172<br>Phone : +61 7 3902 460<br>NATA # 1261 Site # 20 | Perth<br>2/91 Leach Highway<br>Kewdale WA 6105<br>00 Phone : +61 8 9251 9600<br>794 NATA # 1261<br>Site # 23736 |   |
|------------------------------|--|----------------|----------------|------------|-------------|--|-----------------------------|-------------------------------|----------------------------------|---|--------------------------|-------------------------------------|---|--|--|---|---|
| Compar<br>Address<br>Project | Company Name:Cardno (NSW/ACT) Pty LtdAddress:Level 9, 203 Pacific Highway<br>St Leonards<br>NSW 2065Project Name:KYEEMAGH INFANTS SCHOOL<br>80818157 |                |                |            |             |  | Or<br>Re<br>Ph<br>Fa        | der N<br>port #<br>one:<br>x: | o.:<br>#:                        | 6:<br>0:<br>0:  | 27289<br>29496<br>2 9499 | )<br>57700<br>9 390:                | 2   |  |  | Received:<br>Due:<br>Priority:<br>Contact Name:   | Nov 12, 2018 4:31 PM<br>Nov 19, 2018<br>5 Day<br>Ben Withnall |
| Project                      | Project ID: 80818157   |                |                |            |             |  |                             |                               |                                  |   |                          |                                     |   |  | Eurofi   | ns   mgt Analytical Se  | ervices Manager : Nibha Vaidya                                |
|                              | Sample Detail  |                |                |            |             |  | Asbestos Absence / Presence | НОГД                          | Acid Sulfate Soils Field pH Test | Eurofins   mgt Suite B15  | Moisture Set             | NEPM Screen for Soil Classification | Eurofins   mgt Suite B7                     | Eurofins   mgt Suite B8  |  |   |   |
| Melbourn                     | e Laborato   | ry - NATA Site | # 1254 & 14271 |            |             |  |                             | х                             |                                  | х   | х                        | х                                   | х   | х  |  |   |   |
| Sydney La                    | aboratory -  | NATA Site # 18 | 8217           |            |             | Х  | X                           |                               |                                  |   |                          |                                     |   |  | 4  |   |   |
| Brisbane                     | Laboratory   | - NATA Site #  | 20794          |            |             |  |                             |                               | Х                                |   |                          | Х                                   |   |  | 4  |   |   |
| Perth Lab                    | oratory - N  | ATA Site # 237 | 36             |            |             |  |                             |                               |                                  |   |                          |                                     |   |  | -  |   |   |
| 43 BH0                       | 5_4.5-4.95   | Nov 10, 2018   | S              | 011<br>oil | S18-No14999 | <u> </u>   |                             |                               | Х                                |   |                          |                                     |   |  | 4  |   |   |
| 44 IP04                      | 4_0.4  | Nov 10, 2018   | S              | OII<br>oil | S18-No15000 |  |                             | X                             |                                  |   |                          |                                     |   |  | -  |   |   |
| 45 1 P08                     | 5_U.1  | Nov 10, 2018   | S              |            | S18-N015001 |  |                             | ×                             |                                  |   |                          |                                     |   |  | 4  |   |   |
| 40 TP0                       | 9_0.8  | Nov 10, 2018   | S              | oil        | S18 No15002 |  |                             |                               |                                  | -   |                          |                                     |   |  | 4  |   |   |
| 4/ IP10                      | 2 1 0  | Nov 10, 2018   | S              | oil        | S18-No15004 |  |                             | ×                             |                                  | <u> </u>  |                          |                                     |   |  | 4  |   |   |
| 40 RH0                       | 4 0 5-0 95   | Nov 10, 2018   | S              | oil        | S18-No15004 |  |                             | x                             |                                  |   |                          |                                     |   |  | 1  |   |   |
| Test Cour                    | BH04_0.5-0.95   Nov 10, 2018             Soil           S18-No15005           Counts   |                |                |            |             | 14   | 1                           | 6                             | 17                               | 6   | 25                       | 3                                   | 18  | 7  |  |   |   |



#### Internal Quality Control Review and Glossary

#### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.

- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- 4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- 6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- 7. Samples were analysed on an 'as received' basis.
- 8. This report replaces any interim results previously issued.

#### **Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days. \*\*NOTE: pH duplicates are reported as a range NOT as RPD

#### Units

| mg/kg: milligrams per kilogram           | mg/L: milligrams per litre         | ug/L: micrograms per litre                                       |
|--|------------------------------------|--|
| ppm: Parts per million                   | ppb: Parts per billion             | %: Percentage  |
| org/100mL: Organisms per 100 millilitres | NTU: Nephelometric Turbidity Units | MPN/100mL: Most Probable Number of organisms per 100 millilitres |

#### Terms

| Dry              | Where a moisture has been determined on a solid sample the result is expressed on a dry basis.   |
|------------------|--|
| LOR              | Limit of Reporting.  |
| SPIKE            | Addition of the analyte to the sample and reported as percentage recovery.   |
| RPD              | Relative Percent Difference between two Duplicate pieces of analysis.  |
| LCS              | Laboratory Control Sample - reported as percent recovery.  |
| CRM              | Certified Reference Material - reported as percent recovery.   |
| Method Blank     | In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.     |
| Surr - Surrogate | The addition of a like compound to the analyte target and reported as percentage recovery.   |
| Duplicate        | A second piece of analysis from the same sample and reported in the same units as the result to show comparison.   |
| USEPA            | United States Environmental Protection Agency  |
| APHA             | American Public Health Association   |
| TCLP             | Toxicity Characteristic Leaching Procedure   |
| сос              | Chain of Custody   |
| SRA              | Sample Receipt Advice  |
| QSM              | Quality Systems Manual ver 5.1 US Department of Defense  |
| СР               | Client Parent - QC was performed on samples pertaining to this report  |
| NCP              | Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within. |
| TEQ              | Toxic Equivalency Quotient   |

#### **QC** - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

#### **QC Data General Comments**

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike.
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



### **Quality Control Results**

| Test   | Units | Result 1 |     | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|--|-------|----------|-----|----------------------|----------------|--------------------|
| Method Blank   |       |          |     | -                    |                |                    |
| Total Recoverable Hydrocarbons - 1999 NEPM Fractions |       |          |     |                      |                |                    |
| TRH C6-C9  | mg/kg | < 20     |     | 20                   | Pass           |                    |
| TRH C10-C14  | mg/kg | < 20     |     | 20                   | Pass           |                    |
| TRH C15-C28  | mg/kg | < 50     |     | 50                   | Pass           |                    |
| TRH C29-C36  | mg/kg | < 50     |     | 50                   | Pass           |                    |
| Method Blank   |       | 1        | 1   | 1                    |                |                    |
| BTEX   |       |          |     |                      |                |                    |
| Benzene  | mg/kg | < 0.1    |     | 0.1                  | Pass           |                    |
| Toluene  | mg/kg | < 0.1    |     | 0.1                  | Pass           |                    |
| Ethylbenzene   | mg/kg | < 0.1    |     | 0.1                  | Pass           |                    |
| m&p-Xylenes  | mg/kg | < 0.2    |     | 0.2                  | Pass           |                    |
| o-Xylene   | mg/kg | < 0.1    |     | 0.1                  | Pass           |                    |
| Xylenes - Total                                      | mg/kg | < 0.3    |     | 0.3                  | Pass           |                    |
| Method Blank   |       | 1        | I I | 1                    |                |                    |
| Volatile Organics                                    | 1     |          |     |                      |                |                    |
| 1.1-Dichloroethane                                   | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.1-Dichloroethene                                   | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.1.1-Trichloroethane                                | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.1.1.2-Tetrachloroethane                            | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.1.2-Trichloroethane                                | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.1.2.2-Tetrachloroethane                            | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.2-Dibromoethane                                    | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.2-Dichlorobenzene                                  | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.2-Dichloroethane                                   | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.2-Dichloropropane                                  | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.2.3-Trichloropropane                               | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.2.4-Trimethylbenzene                               | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.3-Dichlorobenzene                                  | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.3-Dichloropropane                                  | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.3.5-Trimethylbenzene                               | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.4-Dichlorobenzene                                  | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 2-Butanone (MEK)                                     | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 2-Propanone (Acetone)                                | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 4-Chlorotoluene                                      | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 4-Methyl-2-pentanone (MIBK)                          | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Allyl chloride                                       | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Benzene  | mg/kg | < 0.1    |     | 0.1                  | Pass           |                    |
| Bromobenzene   | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Bromochloromethane                                   | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Bromodichloromethane                                 | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Bromoform  | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Bromomethane   | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Carbon disulfide                                     | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Carbon Tetrachloride                                 | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Chlorobenzene  | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Chloroethane   | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Chloroform   | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Chloromethane  | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| cis-1.2-Dichloroethene                               | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| cis-1.3-Dichloropropene                              | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Dibromochloromethane                                 | mg/kg | < 0.5    |     | 0.5                  | Pass           | i 7                |



| Test   | Units | Result 1 | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|--|-------|----------|----------------------|----------------|--------------------|
| Dibromomethane                                       | ma/ka | < 0.5    | 0.5                  | Pass           |                    |
| Dichlorodifluoromethane                              | ma/ka | < 0.5    | 0.5                  | Pass           |                    |
| Ethylbenzene   | ma/ka | < 0.1    | 0.1                  | Pass           |                    |
| Iodomethane  | ma/ka | < 0.5    | 0.5                  | Pass           |                    |
| Isopropyl benzene (Cumene)                           | ma/ka | < 0.5    | 0.5                  | Pass           |                    |
| m&p-Xylenes  | ma/ka | < 0.2    | 0.2                  | Pass           |                    |
| Methylene Chloride                                   | ma/ka | < 0.5    | 0.5                  | Pass           |                    |
| o-Xylene   | ma/ka | < 0.0    | 0.0                  | Pass           |                    |
| Styrene  | ma/ka | < 0.5    | 0.5                  | Pass           |                    |
| Tetrachloroethene                                    | mg/kg | < 0.5    | 0.5                  | Dass           |                    |
| Toluene  | mg/kg | < 0.1    | 0.5                  | Dass           |                    |
| trans 1.2 Dichloroothono                             | mg/kg | < 0.1    | 0.1                  | Pass           |                    |
| trans-1.2 Dichloropropopo                            | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
|  | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Trichlorofluoromethana                               | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
|  | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
|  | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Aylenes - Total                                      | mg/kg | < 0.3    | 0.3                  | Pass           |                    |
| Method Blank   |       |          |                      |                |                    |
| Total Recoverable Hydrocarbons - 2013 NEPM Fractions |       | .0.5     | 0.5                  | Deee           |                    |
|  | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
|  | mg/kg | < 20     | 20                   | Pass           |                    |
| TRH >C10-C16   | mg/kg | < 50     | 50                   | Pass           |                    |
| TRH >C16-C34   | mg/kg | < 100    | 100                  | Pass           |                    |
| IRH >C34-C40   | mg/kg | < 100    | 100                  | Pass           |                    |
| Method Blank   |       |          |                      |                |                    |
|  | "     | 0.5      | 0.5                  |                |                    |
| Acenaphthene   | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Acenaphthylene                                       | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Anthracene   | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Benz(a)anthracene                                    | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Benzo(a)pyrene                                       | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Benzo(b&j)fluoranthene                               | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Benzo(g.h.i)perylene                                 | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Benzo(k)fluoranthene                                 | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Chrysene   | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Dibenz(a.h)anthracene                                | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Fluoranthene   | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Fluorene   | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Indeno(1.2.3-cd)pyrene                               | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Naphthalene  | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Phenanthrene   | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Pyrene   | mg/kg | < 0.5    | 0.5                  | Pass           |                    |
| Method Blank   |       | 1        |                      |                |                    |
| Organochlorine Pesticides                            |       |          |                      |                |                    |
| Chlordanes - Total                                   | mg/kg | < 0.1    | 0.1                  | Pass           |                    |
| 4.4'-DDD   | mg/kg | < 0.05   | 0.05                 | Pass           |                    |
| 4.4'-DDE   | mg/kg | < 0.05   | 0.05                 | Pass           |                    |
| 4.4'-DDT   | mg/kg | < 0.05   | 0.05                 | Pass           |                    |
| a-BHC  | mg/kg | < 0.05   | 0.05                 | Pass           |                    |
| Aldrin   | mg/kg | < 0.05   | 0.05                 | Pass           | ļ                  |
| b-BHC  | mg/kg | < 0.05   | 0.05                 | Pass           |                    |
| d-BHC  | mg/kg | < 0.05   | 0.05                 | Pass           | ļ                  |
| Dieldrin   | mg/kg | < 0.05   | 0.05                 | Pass           |                    |
| Endosulfan I   | mg/kg | < 0.05   | 0.05                 | Pass           |                    |



| Test                        | Units    | Result 1 | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|-----------------------------|----------|----------|----------------------|----------------|--------------------|
| Endosulfan II               | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Endosulfan sulphate         | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Endrin                      | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Endrin aldehvde             | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Endrin ketone               | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| g-BHC (Lindane)             | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Heptachlor                  | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Heptachlor epoxide          | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Hexachlorobenzene           | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Methoxychlor                | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Toyaphene                   | ma/ka    | < 1      | 1                    | Pass           |                    |
| Method Blank                | iiig/itg |          | -                    | 1 400          |                    |
| Organonhosphorus Pesticides |          |          |                      |                |                    |
| Azinnhos-methyl             | ma/ka    | < 0.2    | 0.2                  | Pass           |                    |
| Boletar                     | mg/kg    | < 0.2    | 0.2                  | Dass           |                    |
| Chlorfonvinnhos             | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Chlorpuritos                | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Chlorpyritos                | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Courseshee                  | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Countaprios                 | mg/kg    | < 2      | 2                    | Pass           |                    |
| Demeter 0                   | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Diaminan                    | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Diazinon                    | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Dichlorvos                  | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Dimethoate                  | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
|                             | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
|                             | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
|                             | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Ethoprop                    | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Ethyl parathion             | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
|                             | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
|                             | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Fenthion                    | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Malathion                   | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Merphos                     | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Methyl parathion            | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Mevinphos                   | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Monocrotophos               | mg/kg    | < 2      | <br>2                | Pass           |                    |
| Naled                       | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Omethoate                   | mg/kg    | < 2      | <br>2                | Pass           |                    |
| Phorate                     | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Pirimiphos-methyl           | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Pyrazophos                  | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Ronnel                      | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Terbufos                    | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Tetrachlorvinphos           | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Tokuthion                   | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Trichloronate               | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Method Blank                |          | i        | <br>                 |                |                    |
| Polychlorinated Biphenyls   |          |          |                      |                |                    |
| Aroclor-1016                | mg/kg    | < 0.1    | <br>0.1              | Pass           |                    |
| Aroclor-1221                | mg/kg    | < 0.1    | 0.1                  | Pass           |                    |
| Aroclor-1232                | mg/kg    | < 0.1    | <br>0.1              | Pass           |                    |
| Aroclor-1242                | mg/kg    | < 0.1    | 0.1                  | Pass           |                    |
| Aroclor-1248                | mg/kg    | < 0.1    | 0.1                  | Pass           |                    |



| Test   | Units    | Result 1 |     | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|--|----------|----------|-----|----------------------|----------------|--------------------|
| Aroclor-1254   | mg/kg    | < 0.1    |     | 0.1                  | Pass           |                    |
| Aroclor-1260   | ma/ka    | < 0.1    |     | 0.1                  | Pass           |                    |
| Total PCB*   | ma/ka    | < 0.1    |     | 0.1                  | Pass           |                    |
| Method Blank   | <u> </u> |          |     |                      |                |                    |
| % Clay   | %        | < 1      |     | 1                    | Pass           |                    |
| Total Organic Carbon                                 | %        | < 0.1    |     | 0.1                  | Pass           |                    |
| Method Blank   |          |          |     |                      |                |                    |
| Heavy Metals   |          |          |     |                      |                |                    |
| Arsenic  | mg/kg    | < 2      |     | 2                    | Pass           |                    |
| Cadmium  | mg/kg    | < 0.4    |     | 0.4                  | Pass           |                    |
| Chromium   | mg/kg    | < 5      |     | 5                    | Pass           |                    |
| Copper   | mg/kg    | < 5      |     | 5                    | Pass           |                    |
| Iron   | mg/kg    | < 20     |     | 20                   | Pass           |                    |
| Lead   | mg/kg    | < 5      |     | 5                    | Pass           |                    |
| Mercury  | mg/kg    | < 0.1    |     | 0.1                  | Pass           |                    |
| Nickel   | mg/kg    | < 5      |     | 5                    | Pass           |                    |
| Zinc   | mg/kg    | < 5      |     | 5                    | Pass           |                    |
| Method Blank   |          |          |     |                      |                |                    |
| Cation Exchange Capacity                             |          |          |     |                      |                |                    |
| Cation Exchange Capacity                             | meq/100g | < 0.05   |     | 0.05                 | Pass           |                    |
| LCS - % Recovery                                     |          |          |     |                      |                |                    |
| Total Recoverable Hydrocarbons - 1999 NEPM Fractions |          |          |     |                      |                |                    |
| TRH C6-C9  | %        | 102      |     | 70-130               | Pass           |                    |
| TRH C10-C14  | %        | 106      |     | 70-130               | Pass           |                    |
| LCS - % Recovery                                     |          |          |     |                      |                |                    |
| втех   |          |          |     |                      |                |                    |
| Benzene  | %        | 93       |     | 70-130               | Pass           |                    |
| Toluene  | %        | 105      |     | 70-130               | Pass           |                    |
| Ethylbenzene   | %        | 116      |     | 70-130               | Pass           |                    |
| m&p-Xylenes  | %        | 119      |     | 70-130               | Pass           |                    |
| Xylenes - Total                                      | %        | 120      |     | 70-130               | Pass           |                    |
| LCS - % Recovery                                     |          |          |     |                      |                |                    |
| Volatile Organics                                    |          |          |     |                      |                |                    |
| 1.1-Dichloroethene                                   | %        | 117      |     | 70-130               | Pass           |                    |
| 1.1.1-Trichloroethane                                | %        | 113      |     | 70-130               | Pass           |                    |
| 1.2-Dichlorobenzene                                  | %        | 104      |     | 70-130               | Pass           |                    |
| 1.2-Dichloroethane                                   | %        | 118      |     | 70-130               | Pass           |                    |
| Trichloroethene                                      | %        | 116      |     | 70-130               | Pass           |                    |
| LCS - % Recovery                                     |          |          |     |                      |                |                    |
| Total Recoverable Hydrocarbons - 2013 NEPM Fractions |          |          |     |                      |                |                    |
| Naphthalene  | %        | 88       |     | 70-130               | Pass           |                    |
| TRH C6-C10   | %        | 98       |     | 70-130               | Pass           |                    |
| TRH >C10-C16   | %        | 114      |     | 70-130               | Pass           |                    |
| LCS - % Recovery                                     |          |          | 1 1 | 1                    |                |                    |
| Polycyclic Aromatic Hydrocarbons                     |          |          |     |                      |                |                    |
| Acenaphthene   | %        | 100      |     | 70-130               | Pass           |                    |
| Acenaphthylene                                       | %        | 112      |     | 70-130               | Pass           |                    |
| Anthracene   | %        | 123      |     | 70-130               | Pass           |                    |
| Benz(a)anthracene                                    | %        | 105      |     | 70-130               | Pass           |                    |
| Benzo(a)pyrene                                       | %        | 75       |     | 70-130               | Pass           |                    |
| Benzo(b&j)fluoranthene                               | %        | 91       |     | 70-130               | Pass           |                    |
| Benzo(g.h.i)perylene                                 | %        | 88       |     | 70-130               | Pass           |                    |
| Benzo(k)fluoranthene                                 | %        | 84       |     | 70-130               | Pass           |                    |
| Chrysene   | %        | 90       |     | 70-130               | Pass           |                    |



| Test                        | Units | Result 1 |     | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|-----------------------------|-------|----------|-----|----------------------|----------------|--------------------|
| Dibenz(a.h)anthracene       | %     | 105      |     | 70-130               | Pass           |                    |
| Fluoranthene                | %     | 121      |     | 70-130               | Pass           |                    |
| Fluorene                    | %     | 96       |     | 70-130               | Pass           |                    |
| Indeno(1.2.3-cd)pyrene      | %     | 91       |     | 70-130               | Pass           |                    |
| Naphthalene                 | %     | 82       |     | 70-130               | Pass           |                    |
| Phenanthrene                | %     | 92       |     | 70-130               | Pass           |                    |
| Pyrene                      | %     | 110      |     | 70-130               | Pass           |                    |
| LCS - % Recovery            |       |          |     |                      |                |                    |
| Organochlorine Pesticides   |       |          |     |                      |                |                    |
| 4.4'-DDD                    | %     | 77       |     | 70-130               | Pass           |                    |
| 4.4'-DDE                    | %     | 90       |     | 70-130               | Pass           |                    |
| 4.4'-DDT                    | %     | 89       |     | 70-130               | Pass           |                    |
| a-BHC                       | %     | 127      |     | 70-130               | Pass           |                    |
| Aldrin                      | %     | 92       |     | 70-130               | Pass           |                    |
| b-BHC                       | %     | 90       |     | 70-130               | Pass           |                    |
| d-BHC                       | %     | 74       |     | 70-130               | Pass           |                    |
| Dieldrin                    | %     | 92       |     | 70-130               | Pass           |                    |
| Endosulfan I                | %     | 106      |     | 70-130               | Pass           |                    |
| Endosulfan II               | %     | 71       |     | 70-130               | Pass           |                    |
| Endosulfan sulphate         | %     | 105      |     | 70-130               | Pass           |                    |
| Endrin                      | %     | 103      |     | 70-130               | Pass           |                    |
| Endrin aldehyde             | %     | 103      |     | 70-130               | Pass           |                    |
| Endrin ketone               | %     | 113      |     | 70-130               | Pass           |                    |
| g-BHC (Lindane)             | %     | 103      |     | 70-130               | Pass           |                    |
| Heptachlor                  | %     | 73       |     | 70-130               | Pass           |                    |
| Heptachlor epoxide          | %     | 88       |     | 70-130               | Pass           |                    |
| Hexachlorobenzene           | %     | 86       |     | 70-130               | Pass           |                    |
| Methoxychlor                | %     | 106      |     | 70-130               | Pass           |                    |
| LCS - % Recovery            |       |          |     |                      |                |                    |
| Organophosphorus Pesticides |       |          |     |                      |                |                    |
| Diazinon                    | %     | 90       |     | 70-130               | Pass           |                    |
| Dimethoate                  | %     | 112      |     | 70-130               | Pass           |                    |
| Ethion                      | %     | 123      |     | 70-130               | Pass           |                    |
| Fenitrothion                | %     | 95       |     | 70-130               | Pass           |                    |
| Methyl parathion            | %     | 89       |     | 70-130               | Pass           |                    |
| Mevinphos                   | %     | 70       |     | 70-130               | Pass           |                    |
| LCS - % Recovery            |       | 1        | 1   | 1                    | -              |                    |
| Polychlorinated Biphenyls   |       |          |     |                      |                |                    |
| Aroclor-1260                | %     | 98       |     | 70-130               | Pass           |                    |
| LCS - % Recovery            | 1     | 1        | r   | I                    |                |                    |
| % Clay                      | %     | 82       |     | 70-130               | Pass           |                    |
| Total Organic Carbon        | %     | 86       |     | 70-130               | Pass           |                    |
| LCS - % Recovery            |       | 1        | r i | T                    |                |                    |
| Heavy Metals                |       |          |     |                      |                |                    |
| Arsenic                     | %     | 108      |     | 80-120               | Pass           |                    |
| Cadmium                     | %     | 105      |     | 80-120               | Pass           |                    |
| Chromium                    | %     | 110      |     | 80-120               | Pass           |                    |
| Copper                      | %     | 109      |     | 80-120               | Pass           |                    |
| Lead                        | %     | 112      |     | 80-120               | Pass           |                    |
| Mercury                     | %     | 94       |     | 75-125               | Pass           |                    |
| Nickel                      | %     | 107      |     | 80-120               | Pass           |                    |
| Zinc                        | %     | 108      |     | 80-120               | Pass           |                    |



| Spike -% Recovery         NCP         %         12         NC         NC           Triki CoC-0         M18-No12287         NCP         %         112         NC         NC         NC           Spike -% Recovery          NCP         %         106         70-130         Pass           Binsane         M18-No12287         NCP         %         106         70-130         Pass           Binsane         M18-No12287         NCP         %         101         70-130         Pass           Ethylemane         M18-No12287         NCP         %         115         70-130         Pass           Sylke -% Kecovery         M18-No12287         NCP         %         115         70-130         Pass           Total Recoverable hydrocarbons-         M18-No12287         NCP         %         92         70-130         Pass           Total Recoverable hydrocarbons         M18-No12287         NCP         %         92         70-130         Pass           Spike -% Recovery         M18-No12287         NCP         %         92         70-130         Pass           Catal Arbracene         S18-No14508         NCP         %         124         70-130         Pass <th>Test</th> <th>Lab Sample ID</th> <th>QA<br/>Source</th> <th>Units</th> <th>Result 1</th> <th>A</th> <th>Acceptance<br/>Limits</th> <th>Pass<br/>Limits</th> <th>Qualifying<br/>Code</th>  | Test                             | Lab Sample ID   | QA<br>Source | Units | Result 1 | A    | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|---|----------------------------------|-----------------|--------------|-------|----------|------|----------------------|----------------|--------------------|
| Total Recoverable Hydrocarbons - 1999 NEPN Fractional Procession of the section f the section of the section of the section of the se | Spike - % Recovery               | 1               |              |       |          |      |                      |                |                    |
| TRH CoC20         M18-b012287         NCP         %         112         70.130         Pass           Bream         M18-b012287         NCP         %         95         70.130         Pass           Taluane         M18-b012287         NCP         %         1014         70.130         Pass           Ethylbenzone         M18-b012287         NCP         %         1115         70.130         Pass           Gavanes         M18-b012287         NCP         %         1116         70.130         Pass           Gavanes         M18-b012287         NCP         %         1116         70.130         Pass           Gavanes         M18-b012287         NCP         %         116         70.130         Pass           Fall         Recoverbifydocarbones-U31 NEPM Frances         Keese         70.130         Pass           Total Recoverbifydocarbones         Keese         70.130         Pass         106         70.130         Pass           Shike-Sk Recovery         Keese         70.130         Pass         106         70.130         Pass           Shike-Sk Recovery         Keese         70.130         Pass         106         70.130         Pass           Shike-Sk  | Total Recoverable Hydrocarbons - | 1999 NEPM Fract | ions         |       | Result 1 |      |                      |                |                    |
| Splite - % Recovery         Result         Result         Partial         Partia         Partial         Partial  | TRH C6-C9                        | M18-No12287     | NCP          | %     | 112      |      | 70-130               | Pass           |                    |
| BTEX         Result         Pass         Pass           Toluene         M18-No12287         NCP         %         95         70-130         Pass           Ethylbenzone         M18-No12287         NCP         %         104         70-130         Pass           Ethylbenzone         M18-No12287         NCP         %         115         70-130         Pass           C-Xienes         M18-No12287         NCP         %         116         70-130         Pass           Spike - % Recovery         Total Recoverable Hydrocathons         2013 MEP Fractions         Result 1              Total Recoverable Hydrocathons         2013 MEP fractions         Result 1               Polycylic Aromatic Hydrocathons         S18-No14508         NCP         %         122         70-130         Pass           Cacenaphtimene         S18-No14508         NCP         %         85         70-130         Pass           Anthracene         S18-No14508         NCP         %         85         70-130         Pass           Benzola/Jintranee         S18-No14508         NCP         %         85         70-130         Pass           Ben  | Spike - % Recovery               |                 |              |       |          | <br> |                      |                |                    |
| Benzene         M18-No12287         NCP         %         95         70-130         Pass           Etrybenzane         M18-No12287         NCP         %         111         70-130         Pass           Etrybenzane         M18-No12287         NCP         %         1115         70-130         Pass           Scylenes         M18-No12287         NCP         %         116         70-130         Pass           Sylenes         Recoverable Mydrocarbons - 2013 MEPM Fractions         Result 1         70-130         Pass           Splke - % Recovery         Total Recoverable Mydrocarbons - 2013 MEPM Fractions         Result 1         70-130         Pass           Splke - % Recovery         Total Recoverable Mydrocarbons - 2013 MEPM Fractions         Result 1         70-130         Pass           Splke - % Recovery         Total Recoverable Mydrocarbons         Result 1         70-130         Pass           Cancapathylane         S18-No14508         NCP         %         122         70-130         Pass           Benz(a) jurne         S18-No14508         NCP         %         103         70-130         Pass           Benz(a) jurne         S18-No14508         NCP         %         103         70-130         Pass <tr< td=""><td>BTEX</td><td>I</td><td></td><td></td><td>Result 1</td><td></td><td></td><td></td><td></td></tr<>  | BTEX                             | I               |              |       | Result 1 |      |                      |                |                    |
| Toluane         M18-No12227         NCP         %         104         70-130         Pass           msbr_Xylenes         M18-No12287         NCP         %         1115         70-130         Pass           o-Xylene         M18-No12287         NCP         %         115         70-130         Pass           o-Xylenes         M18-No12287         NCP         %         115         70-130         Pass           Spike -X, Recovery         Total Recoverable Hydrocarbons - 2013 NEPM Fractions         Result 1         70-130         Pass           Total Recoverable Hydrocarbons - 2013 NEPM Fractions         Result 1         70-130         Pass           Spike -X, Recovery         %         106         70-130         Pass           Spike -X, Recovery         %         106         70-130         Pass           Acenaphthysic         S18-No14508         NCP         %         124         70-130         Pass           Acenaphthysic         S18-No14508         NCP         %         85         70-130         Pass           Benzo(a)/unorthene         S18-No14508         NCP         %         86         70-130         Pass           Benzo(a)/unorthene         S18-No14508         NCP         %   | Benzene                          | M18-No12287     | NCP          | %     | 95       |      | 70-130               | Pass           |                    |
| Ehylbenzene         M18-Not2227         NCP         %         111         Tot-130         Pass           oxbychene         M18-Not2228         NCP         %         115         70-130         Pass           Sylenes         M18-Not2287         NCP         %         115         70-130         Pass           Sylenes         Mescovers         Test         Recovers         70-130         Pass           TRH Co-C10         M18-Not2287         NCP         %         106         70-130         Pass           Splee         MEscoversble Hydrocarbons - 2013 NEPM Fractione         Result 1         70-130         Pass           Splee - Kecovery         Force 10         M18-Not2287         NCP         %         106         70-130         Pass           Acanaphthene         S18-Not4508         NCP         %         124         70-130         Pass           Benzo(alpyrene         S18-Not4508         NCP         %         96         70-130         Pass           Benzo(alpyrene         S18-Not4508         NCP         %         87         70-130         Pass           Benzo(alpyrene         S18-Not4508         NCP         %         105         70-130         Pass  | Toluene                          | M18-No12287     | NCP          | %     | 104      |      | 70-130               | Pass           |                    |
| mšp. Xylenes         M18-No12287         NCP         %         115         70-130         Pass           Xylenes - Total         M18-No12287         NCP         %         116         70-130         Pass           Spike - ½ Recoverable Hydrocarbons - 2013 NEPM Fractions         NCP         %         116         70-130         Pass           Teal Recoverable Hydrocarbons - 2013 NEPM Fractions         NCP         %         92         70-130         Pass           TRI C6-C10         M18-No12287         NCP         %         92         70-130         Pass           Spike - ½ Recoverable Hydrocarbons - 2013 NEPM Fractions         NCP         %         106         70-130         Pass           Changhthalene         M18-No12287         NCP         %         106         70-130         Pass           Accanaphthene         S18-No14508         NCP         %         122         70-130         Pass           Accanaphthysine         S18-No14508         NCP         %         87         70-130         Pass           Benzologinytina         S18-No14508         NCP         %         87         70-130         Pass           Benzologinytinathene         S18-No14508         NCP         %         97         7   | Ethylbenzene                     | M18-No12287     | NCP          | %     | 111      |      | 70-130               | Pass           |                    |
| o-Xylene         M18-No12287         NCP         %         116         70-130         Pass           Spike - % Recovery         Total         M18-No12287         NCP         %         115         70-130         Pass           Spike - % Recovery         Total Accoverable Hydrocarbons-2013 NEPM Fractions         Result 1         70-130         Pass           Spike - % Recovery         TRH C6-C10         M18-No12287         NCP         %         92         70-130         Pass           Spike - % Recovery         Keenaphthene         S18-No14508         NCP         %         85         70-130         Pass           Acenaphthene         S18-No14508         NCP         %         85         70-130         Pass           Acenaphthene         S18-No14508         NCP         %         86         70-130         Pass           Acenaphthene         S18-No14508         NCP         %         87         70-130         Pass           Benzo(a)phyone         S18-No14508         NCP         %         87         70-130         Pass           Benzo(b)phyone         S18-No14508         NCP         %         87         70-130         Pass           Dibenz(A)panthracene         S18-No14508         NCP<  | m&p-Xylenes                      | M18-No12287     | NCP          | %     | 115      |      | 70-130               | Pass           |                    |
| Xylenes-Total         MIP-N012287         NCP         %         115         70-130         Pass           Spike - % Recovery         Total Recoverable Hydrocarbons - 2013 NEPM Fractions         Result 1         Constraint of the Not 2287         NCP         %         92         70-130         Pass           TRH C6-C10         M18-Not 2287         NCP         %         92         70-130         Pass           Spike - % Recovery         Total Method 2287         NCP         %         92         70-130         Pass           Spike - % Recovery         Total Method 2087         NCP         %         106         70-130         Pass           Acenaphthylene         S18-No14508         NCP         %         124         70-130         Pass           Activacene         S18-No14508         NCP         %         122         70-130         Pass           Benzolokijuoranthene         S18-No14508         NCP         %         109         70-130         Pass           Benzolokijuoranthene         S18-No14508         NCP         %         105         70-130         Pass           Benzolokijuoranthene         S18-No14508         NCP         %         11         70-130         Pass           Ibenziahjant   | o-Xylene                         | M18-No12287     | NCP          | %     | 116      |      | 70-130               | Pass           |                    |
| Spike - % Recovery         Result 1         Image: Constraint of the second of the seco                   | Xylenes - Total                  | M18-No12287     | NCP          | %     | 115      |      | 70-130               | Pass           |                    |
| Total Recoverable Hydrocarbons - 2013 NEPN Fractions         Result 1         Image: Control of the second s                   | Spike - % Recovery               |                 |              |       |          | <br> |                      |                |                    |
| Naphthalene         M18-No12287         NCP         %         92         70-130         Pass           Spike - % Recovery         70-130         Pass         70-130         Pass         70-130         Pass           Spike - % Recovery         70-130         Pass         70-130         Pass         70-130         Pass           Acenaphthone         S18-No14508         NCP         %         124         70-130         Pass           Acenaphthone         S18-No14508         NCP         %         86         70-130         Pass           Acenaphthone         S18-No14508         NCP         %         87         70-130         Pass           Benz(a)(n)pervine         S18-No14508         NCP         %         87         70-130         Pass           Benza(gh.1)pervine         S18-No14508         NCP         %         82         70-130         Pass           Chrysene         S18-No14508         NCP         %         99         70-130         Pass           Dibenz(a,h)anthracene         S18-No14508         NCP         %         91         70-130         Pass           Ibuorene         S18-No14508         NCP         %         91         70-130         Pass   | Total Recoverable Hydrocarbons - | 2013 NEPM Fract | ions         |       | Result 1 |      |                      |                |                    |
| TRH Co-C10         M18-No12287         NCP         %         106         70-130         Pass           Spike - % Recovery         Result 1         Result 1         70-130         Pass           Acenaphthyse         S18-No14508         NCP         %         124         70-130         Pass           Acenaphthyse         S18-No14508         NCP         %         96         70-130         Pass           Acenaphthyse         S18-No14508         NCP         %         96         70-130         Pass           Acenaphthyse         S18-No14508         NCP         %         97         70-130         Pass           Benzo(a)prore         S18-No14508         NCP         %         87         70-130         Pass           Benzo(b)prore         S18-No14508         NCP         %         82         70-130         Pass           Benzo(b)prore         S18-No14508         NCP         %         99         70-130         Pass           Benzo(b)prore         S18-No14508         NCP         %         91         70-130         Pass           Ibbar2(a)hintracene         S18-No14508         NCP         %         92         70-130         Pass           Ibbar2(a)hintracene   | Naphthalene                      | M18-No12287     | NCP          | %     | 92       |      | 70-130               | Pass           |                    |
| Spike - % Recovery         Result 1         Result 1 <td>TRH C6-C10</td> <td>M18-No12287</td> <td>NCP</td> <td>%</td> <td>106</td> <td></td> <td>70-130</td> <td>Pass</td> <td></td>   | TRH C6-C10                       | M18-No12287     | NCP          | %     | 106      |      | 70-130               | Pass           |                    |
| Polycyclic Aromatic Hydrocarbons         Result 1         <  | Spike - % Recovery               |                 |              |       | 1        | <br> |                      |                |                    |
| Acenaphthene         S18-No14508         NCP         %         124         70-130         Pass           Acenaphthylene         S18-No14508         NCP         %         85         70-130         Pass           Anthracene         S18-No14508         NCP         %         96         70-130         Pass           Benz(a)ajhtracene         S18-No14508         NCP         %         122         70-130         Pass           Benz(a)ajhtracene         S18-No14508         NCP         %         87         70-130         Pass           Benz(a)Ajhtracene         S18-No14508         NCP         %         82         70-130         Pass           Benz(a)Ajhtracene         S18-No14508         NCP         %         99         70-130         Pass           Chrysene         S18-No14508         NCP         %         97         70-130         Pass           Fluoranthene         S18-No14508         NCP         %         97         70-130         Pass           Indenci(1.2.3-cd)pyrene         S18-No14508         NCP         %         12         70-130         Pass           Naphthalene         S18-No14508         NCP         %         124         70-130         Pass  | Polycyclic Aromatic Hydrocarbons | 5               |              |       | Result 1 |      |                      |                |                    |
| Acenaphthylene         S18-Not 4508         NCP         %         85         70-130         Pass           Anthracene         S18-Not 4508         NCP         %         96         70-130         Pass           Benzo(a)pyrene         S18-Not 4508         NCP         %         87         70-130         Pass           Benzo(b)fluoranthene         S18-Not 4508         NCP         %         87         70-130         Pass           Benzo(b,fluoranthene         S18-Not 4508         NCP         %         82         70-130         Pass           Benzo(b,fluoranthene         S18-Not 4508         NCP         %         99         70-130         Pass           Benzo(k,fluoranthene         S18-Not 4508         NCP         %         97         70-130         Pass           Fluoranthene         S18-Not 4508         NCP         %         91         70-130         Pass           Fluoranthene         S18-Not 4508         NCP         %         112         70-130         Pass           Inden(1,2.3-cd)pyrene         S18-Not 4508         NCP         %         106         70-130         Pass           Pyrene         S18-Not 4508         NCP         %         106         70-130   | Acenaphthene                     | S18-No14508     | NCP          | %     | 124      |      | 70-130               | Pass           |                    |
| Anthracene         S18-No14508         NCP         %         96         70-130         Pass           Benz(a)anthracene         S18-No14508         NCP         %         122         70-130         Pass           Benzo(a)prinen         S18-No14508         NCP         %         109         70-130         Pass           Benzo(a)prine         S18-No14508         NCP         %         109         70-130         Pass           Benzo(b)prine         S18-No14508         NCP         %         82         70-130         Pass           Benzo(b)prine         S18-No14508         NCP         %         99         70-130         Pass           Benzo(b)prine         S18-No14508         NCP         %         97         70-130         Pass           Chrysene         S18-No14508         NCP         %         91         70-130         Pass           Fluorantene         S18-No14508         NCP         %         91         70-130         Pass           Pluoranthene         S18-No14508         NCP         %         92         70-130         Pass           Prene         S18-No14508         NCP         %         92         70-130         Pass <td< td=""><td>Acenaphthylene</td><td>S18-No14508</td><td>NCP</td><td>%</td><td>85</td><td></td><td>70-130</td><td>Pass</td><td></td></td<>   | Acenaphthylene                   | S18-No14508     | NCP          | %     | 85       |      | 70-130               | Pass           |                    |
| Benz(a)anthracene         S18-No14508         NCP         %         122         70-130         Pass           Benzo(b)fluoranthene         S18-No14508         NCP         %         87         70-130         Pass           Benzo(b)fluoranthene         S18-No14508         NCP         %         109         70-130         Pass           Benzo(b)fluoranthene         S18-No14508         NCP         %         82         70-130         Pass           Chrysene         S18-No14508         NCP         %         99         70-130         Pass           Dibenz(a,h)anthracene         S18-No14508         NCP         %         97         70-130         Pass           Fluoranthene         S18-No14508         NCP         %         91         70-130         Pass           Inden(1.2.3-cd)pyrene         S18-No14508         NCP         %         112         70-130         Pass           Phenanthracene         S18-No14508         NCP         %         106         70-130         Pass           Pyrene         S18-No14508         NCP         %         106         70-130         Pass           A:4-DDT         S18-No16633         NCP         %         124         70-130  | Anthracene                       | S18-No14508     | NCP          | %     | 96       |      | 70-130               | Pass           |                    |
| Benzo(a)pyrene         S18-No14508         NCP         %         87         70-130         Pass           Benzo(bÅ)fluoranthene         S18-No14508         NCP         %         109         70-130         Pass           Benzo(k,h)iperylene         S18-No14508         NCP         %         99         70-130         Pass           Benzo(k,h)iperylene         S18-No14508         NCP         %         99         70-130         Pass           Dibenz(a,h)anthracene         S18-No14508         NCP         %         97         70-130         Pass           Fluoranthene         S18-No14508         NCP         %         97         70-130         Pass           Fluoranthene         S18-No14508         NCP         %         91         70-130         Pass           Fluoranthene         S18-No14508         NCP         %         92         70-130         Pass           Prenen         S18-No14508         NCP         %         92         70-130         Pass           Pyrene         S18-No14508         NCP         %         92         70-130         Pass           44'DDD         S18-No16633         NCP         %         92         70-130         Pass  | Benz(a)anthracene                | S18-No14508     | NCP          | %     | 122      |      | 70-130               | Pass           |                    |
| Benzo(b3)fluoranthene         S18-No14508         NCP         %         109         70-130         Pass           Benzo(g).hijperylene         S18-No14508         NCP         %         82         70-130         Pass           Benzo(K).toroanthene         S18-No14508         NCP         %         97         70-130         Pass           Chrysene         S18-No14508         NCP         %         97         70-130         Pass           Fluoranthene         S18-No14508         NCP         %         97         70-130         Pass           Fluoranthene         S18-No14508         NCP         %         91         70-130         Pass           Indeno(1.2.3-cd)pyrene         S18-No14508         NCP         %         92         70-130         Pass           Phenanthrene         S18-No14508         NCP         %         92         70-130         Pass           Phenanthrene         S18-No14508         NCP         %         106         70-130         Pass           Pyrene         S18-No14508         NCP         %         124         70-130         Pass           Ad-DDD         S18-No16633         NCP         %         124         70-130         Pass <td>Benzo(a)pyrene</td> <td>S18-No14508</td> <td>NCP</td> <td>%</td> <td>87</td> <td></td> <td>70-130</td> <td>Pass</td> <td></td>   | Benzo(a)pyrene                   | S18-No14508     | NCP          | %     | 87       |      | 70-130               | Pass           |                    |
| Benzo(g).h.i)perylene         S18-No14508         NCP         %         82         70-130         Pass           Benzo(k)fluoranthene         S18-No14508         NCP         %         99         70-130         Pass           Chrysene         S18-No14508         NCP         %         97         70-130         Pass           Dibenz(a,l)anthracene         S18-No14508         NCP         %         97         70-130         Pass           Fluoranthene         S18-No14508         NCP         %         91         70-130         Pass           Fluoranthene         S18-No14508         NCP         %         91         70-130         Pass           Indeno(1.2.3-cd)pyrene         S18-No14508         NCP         %         92         70-130         Pass           Naphthalene         S18-No14508         NCP         %         106         70-130         Pass           Pyrene         S18-No14508         NCP         %         124         70-130         Pass           Organochlorine Pesticides         NCP         %         85         70-130         Pass           4.4'DDD         S18-No16633         NCP         %         121         70-130         Pass   | Benzo(b&j)fluoranthene           | S18-No14508     | NCP          | %     | 109      |      | 70-130               | Pass           |                    |
| Benzo(k)fluoranthene         S18-No14508         NCP         %         99         70-130         Pass           Chrysene         S18-No14508         NCP         %         105         70-130         Pass           Dibenz(a.h)anthracene         S18-No14508         NCP         %         97         70-130         Pass           Fluoranthene         S18-No14508         NCP         %         91         70-130         Pass           Fluoranthene         S18-No14508         NCP         %         85         70-130         Pass           Inden(1.2.3-cd)pyrene         S18-No14508         NCP         %         85         70-130         Pass           Naphthalene         S18-No14508         NCP         %         124         70-130         Pass           Phenanthrene         S18-No14508         NCP         %         124         70-130         Pass           Spite-*         Recovery          70-130         Pass            S18-No16633         NCP         %         85         70-130         Pass           4.4'DDT         S18-No16633         NCP         %         121         70-130         Pass           4.4'DDT         MB-No14233  | Benzo(g.h.i)perylene             | S18-No14508     | NCP          | %     | 82       |      | 70-130               | Pass           |                    |
| Chrysene         S18-No14508         NCP         %         105         ()         70-130         Pass           Dibenz(a.h)anthracene         S18-No14508         NCP         %         97         ()         ()         70-130         Pass           Fluoranthene         S18-No14508         NCP         %         91         ()         70-130         Pass           Fluoranthene         S18-No14508         NCP         %         91         ()         70-130         Pass           Indeno(1.2.3-cd)pyrene         S18-No14508         NCP         %         92         ()         ()         70-130         Pass           Phenanthrene         S18-No14508         NCP         %         106         ()         70-130         Pass           Pytrene         S18-No14508         NCP         %         102         ()         70-130         Pass           44-DDT         S18-No16633         NCP         %         85         ()         70-130         Pass           4.4-DDT         S18-No16633         NCP         %         121         ()         70-130         Pass           4.4-DDT         S18-No16633         NCP         %         121         ()         70-130 <td>Benzo(k)fluoranthene</td> <td>S18-No14508</td> <td>NCP</td> <td>%</td> <td>99</td> <td></td> <td>70-130</td> <td>Pass</td> <td></td>  | Benzo(k)fluoranthene             | S18-No14508     | NCP          | %     | 99       |      | 70-130               | Pass           |                    |
| Dibenz(a.h)anthracene         S18-No14508         NCP         %         97         ()         70-130         Pass           Fluoranthene         S18-No14508         NCP         %         91         ()         70-130         Pass           Fluoranthene         S18-No14508         NCP         %         112         ()         70-130         Pass           Indeno(1.2.3-cd)pyrene         S18-No14508         NCP         %         92         ()         70-130         Pass           Naphthalene         S18-No14508         NCP         %         106         ()         70-130         Pass           Pyrene         S18-No14508         NCP         %         106         ()         70-130         Pass           Spike-Xecovery         V         %         106         ()         70-130         Pass           4.4-DDD         S18-No16633         NCP         %         855         ()         70-130         Pass           4.4-DDT         S18-No16633         NCP         %         124         ()         70-130         Pass           Addrin         S18-No16633         NCP         %         101         ()         70-130         Pass           Aldrin <td>Chrysene</td> <td>S18-No14508</td> <td>NCP</td> <td>%</td> <td>105</td> <td></td> <td>70-130</td> <td>Pass</td> <td></td>   | Chrysene                         | S18-No14508     | NCP          | %     | 105      |      | 70-130               | Pass           |                    |
| FluorantheneS18-No14508NCP%91()70-130PassFluoraneS18-No14508NCP%112()70-130PassInden(1.2.3-cd)pyreneS18-No14508NCP%82()70-130PassMaphthaleneS18-No14508NCP%92()70-130PassPhenanthreneS18-No14508NCP%92()()70-130PassPyreneS18-No14508NCP%106()()70-130PassStereS18-No14508NCP%124()()70-130PassCyreneS18-No1633NCP%85()()70-130Pass4.4'DDCS18-No1633NCP%85()()70-130Pass4.4'DDTM18-No1633NCP%124()70-130Passa-BHCS18-No16633NCP%124()70-130Passa-BHCS18-No16633NCP%100()70-130Passb-BHCS18-No16633NCP%100()70-130Passb-BHCS18-No16633NCP%103()70-130Passb-BHCS18-No16633NCP%103()70-130Passb-BHCS18-No16633NCP%103()70-130Passb-BHCS18-No16633NCP%103()70-1   | Dibenz(a.h)anthracene            | S18-No14508     | NCP          | %     | 97       |      | 70-130               | Pass           |                    |
| Fluorene\$18-No14508NCP%112I70-130PassInden(1.2.3-cd)pyrene\$18-No14508NCP%855I70-130PassNaphtalene\$18-No14508NCP%92I70-130PassPhenanthrene\$18-No14508NCP%106I70-130PassPyrene\$18-No14508NCP%124I70-130PassSite.No14508NCP%124I70-130PassPyrene\$18-No14508NCP%124I70-130PassSite.No14508NCP%124I70-130PassAd-DDE\$18-No16633NCP%855I70-130PassI4.4'-DD\$18-No16633NCP%92I70-130PassI4.4'-DDM18-No14233NCP%124I70-130PassIa-BHC\$18-No16633NCP%101I70-130PassIa-BHC\$18-No16633NCP%101I70-130PassIb-BHC\$18-No16633NCP%103I70-130PassIa-BHC\$18-No16633NCP%103I70-130PassIa-BHC\$18-No16633NCP%103I70-130PassIa-BHC\$18-No16633NCP%103I <t< td=""><td>Fluoranthene</td><td>S18-No14508</td><td>NCP</td><td>%</td><td>91</td><td></td><td>70-130</td><td>Pass</td><td></td></t<>  | Fluoranthene                     | S18-No14508     | NCP          | %     | 91       |      | 70-130               | Pass           |                    |
| Indeno(1.2.3-cd)pyrene         S18-No14508         NCP         %         85         70-130         Pass           Naphthalene         S18-No14508         NCP         %         92          70-130         Pass           Phenanthrene         S18-No14508         NCP         %         106          70-130         Pass           Pyrene         S18-No14508         NCP         %         124         70-130         Pass           Spike -% Recovery          70-130         Pass          70-130         Pass           4.4'-DDD         S18-No16633         NCP         %         855          70-130         Pass           4.4'-DDT         S18-No16633         NCP         %         855          70-130         Pass           -4.4'-DDT         S18-No16633         NCP         %         121          70-130         Pass           -BHC         S18-No16633         NCP         %         101         70-130         Pass            -BHC         S18-No16633         NCP         %         101         70-130         Pass            -BHC         S18-No16633         NCP         % <td>Fluorene</td> <td>S18-No14508</td> <td>NCP</td> <td>%</td> <td>112</td> <td></td> <td>70-130</td> <td>Pass</td> <td></td>  | Fluorene                         | S18-No14508     | NCP          | %     | 112      |      | 70-130               | Pass           |                    |
| NaphthaleneS18-No14508NCP%9270-130PassPhenanthreneS18-No14508NCP%10670-130PassPyreneS18-No14508NCP%12470-130PassSpike-X's RecoverFesult 170-130PassSpike-X's RecoverResult 170-130PassCranceS18-No16633NCP%8570-130Pass4.4'-DDS18-No16633NCP%9270-130Pass4.4'-DDTM18-No14233NCP%12170-130Pass4.4'-DTM18-No1633NCP%12170-130Passa-BHCS18-No16633NCP%10170-130PassAldrinS18-No16633NCP%10170-130Passb-BHCS18-No16633NCP%10370-130Passd-BHCS18-No16633NCP%10370-130PassDieldrinS18-No16633NCP%10370-130PassEndosulfan IS18-No16633NCP%10370-130PassEndosulfan IIS18-No16633NCP%8870-130PassEndosulfan IIS18-No16633NCP%8870-130PassEndosulfan IIS18-No16633NCP%88<   | Indeno(1.2.3-cd)pyrene           | S18-No14508     | NCP          | %     | 85       |      | 70-130               | Pass           |                    |
| Phenanthrene         S18-No14508         NCP         %         106         70-130         Pass           Pyrene         S18-No14508         NCP         %         124          70-130         Pass           Spike - % Recovery          Result 1         70-130         Pass            4.4'-DDD         S18-No16633         NCP         %         85         70-130         Pass           4.4'-DDT         S18-No16633         NCP         %         92         70-130         Pass           4.4'-DDT         M18-No14233         NCP         %         121         70-130         Pass           a-BHC         S18-No16633         NCP         %         124         70-130         Pass           a-BHC         S18-No16633         NCP         %         101         70-130         Pass           b-BHC         S18-No16633         NCP         %         100         70-130         Pass           beldrin         S18-No16633         NCP         %         103         70-130         Pass           Indosulfan I         S18-No16633         NCP         %         103         70-130         Pass           Endosulfan Sulphate         S  | Naphthalene                      | S18-No14508     | NCP          | %     | 92       |      | 70-130               | Pass           |                    |
| Pyrene         S18-No14508         NCP         %         124         70-130         Pass           Spike - % Recovery         Result 1   | Phenanthrene                     | S18-No14508     | NCP          | %     | 106      |      | 70-130               | Pass           |                    |
| Spike - % Recovery         Result 1         Result 1 <td>Pyrene</td> <td>S18-No14508</td> <td>NCP</td> <td>%</td> <td>124</td> <td></td> <td>70-130</td> <td>Pass</td> <td></td>   | Pyrene                           | S18-No14508     | NCP          | %     | 124      |      | 70-130               | Pass           |                    |
| Organochlorine Pesticides         Result 1         Resu  | Spike - % Recovery               |                 |              |       |          |      |                      |                |                    |
| 4.4'-DDDS18-No16633NCP%85I70-130PassI4.4'-DDES18-No16633NCP%92I70-130PassI4.4'-DDTM18-No14233NCP%121I70-130PassIa-BHCS18-No16633NCP%124I70-130PassIb-BHCS18-No16633NCP%101I70-130PassIb-BHCS18-No16633NCP%100I70-130PassId-BHCS18-No16633NCP%100I70-130PassId-BHCS18-No16633NCP%103II70-130PassId-BHCS18-No16633NCP%103III <td>Organochlorine Pesticides</td> <td></td> <td></td> <td></td> <td>Result 1</td> <td></td> <td></td> <td></td> <td></td>   | Organochlorine Pesticides        |                 |              |       | Result 1 |      |                      |                |                    |
| 4.4'-DDE       \$18+No16633       NCP       %       92       70-130       Pass         4.4'-DDT       M18-No14233       NCP       %       121       70-130       Pass         a-BHC       \$18+No16633       NCP       %       124       70-130       Pass         Aldrin       \$18+No16633       NCP       %       101       70-130       Pass         b-BHC       \$18+No16633       NCP       %       100       70-130       Pass         d-BHC       \$18+No16633       NCP       %       100       70-130       Pass         d-BHC       \$18+No16633       NCP       %       103       70-130       Pass         d-BHC       \$18+No16633       NCP       %       84       70-130       Pass         Dieldrin       \$18+No16633       NCP       %       84       70-130       Pass         Endosulfan I       \$18+No16633       NCP       %       84       70-130       Pass         Endosulfan sulphate       \$18+No16633       NCP       %       81       70-130       Pass         Endrin aldehyde       \$18+No16633       NCP       %       88       70-130       Pass         g-BHC (Linda  | 4.4'-DDD                         | S18-No16633     | NCP          | %     | 85       |      | 70-130               | Pass           |                    |
| 4.4-DDT       M18-No14233       NCP       %       121       70-130       Pass       Image: state s  | 4.4'-DDE                         | S18-No16633     | NCP          | %     | 92       |      | 70-130               | Pass           |                    |
| a-BHC         S18-No16633         NCP         %         124         70-130         Pass         Indext           Aldrin         S18-No16633         NCP         %         101         70-130         Pass         Indext           b-BHC         S18-No16633         NCP         %         100         70-130         Pass         Indext           d-BHC         S18-No16633         NCP         %         103         70-130         Pass         Indext           Dieldrin         S18-No16633         NCP         %         84         70-130         Pass         Indext           Endosulfan I         S18-No16633         NCP         %         103         70-130         Pass         Indext           Endosulfan II         S18-No16633         NCP         %         74         70-130         Pass         Indext           Endosulfan sulphate         S18-No16633         NCP         %         81         70-130         Pass         Indext           Endrin aldehyde         S18-No16633         NCP         %         88         70-130         Pass         Indext           g-BHC (Lindane)         S18-No16633         NCP         %         76         70-130         Pass <t< td=""><td>4.4'-DDT</td><td>M18-No14233</td><td>NCP</td><td>%</td><td>121</td><td></td><td>70-130</td><td>Pass</td><td></td></t<>   | 4.4'-DDT                         | M18-No14233     | NCP          | %     | 121      |      | 70-130               | Pass           |                    |
| AldrinS18-No16633NCP%10170-130PassInterpretainb-BHCS18-No16633NCP%10070-130PassInterpretaind-BHCS18-No16633NCP%10370-130PassInterpretainDieldrinS18-No16633NCP%8470-130PassInterpretainEndosulfan IS18-No16633NCP%10370-130PassInterpretainEndosulfan sulphateS18-No16633NCP%8170-130PassInterpretainEndrinS18-No16633NCP%8170-130PassInterpretainEndrinS18-No16633NCP%8870-130PassInterpretainEndrin aldehydeS18-No16633NCP%7410070-130PassInterpretaing-BHC (Lindane)S18-No16633NCP%7670-130PassInterpretainHeptachlor epoxideS18-No16633NCP%8870-130PassInterpretainHeptachlor epoxideS18-No16633NCP%8870-130PassInterpretainHeptachlor epoxideS18-No16633NCP%8870-130PassInterpretainHeptachlor epoxideS18-No16633NCP%9070-130PassInterpretainHeptachlor epoxideS18-No16633NCP%9070-130PassInterpretainHeptachlor epoxide   | a-BHC                            | S18-No16633     | NCP          | %     | 124      |      | 70-130               | Pass           |                    |
| b-BHC         S18-No16633         NCP         %         100         70-130         Pass         Image: constraint of the state   | Aldrin                           | S18-No16633     | NCP          | %     | 101      |      | 70-130               | Pass           |                    |
| d-BHCS18-No16633NCP%103Image: State in the state                                       | b-BHC                            | S18-No16633     | NCP          | %     | 100      |      | 70-130               | Pass           |                    |
| Dieldrin         S18-No16633         NCP         %         84         70-130         Pass         Image: constraint of the state of the stat  | d-BHC                            | S18-No16633     | NCP          | %     | 103      |      | 70-130               | Pass           |                    |
| Endosulfan I         S18-No16633         NCP         %         103         70-130         Pass         Image: constraint of the state of the  | Dieldrin                         | S18-No16633     | NCP          | %     | 84       |      | 70-130               | Pass           |                    |
| Endosulfan II         S18-No16633         NCP         %         74         70-130         Pass           Endosulfan sulphate         S18-No16633         NCP         %         81         70-130         Pass            Endosulfan sulphate         S18-No16633         NCP         %         81         70-130         Pass            Endrin         S18-No16633         NCP         %         88         70-130         Pass            Endrin aldehyde         S18-No16633         NCP         %         74         70-130         Pass            Endrin ketone         S18-No16633         NCP         %         76         70-130         Pass            g-BHC (Lindane)         S18-No16633         NCP         %         76         70-130         Pass            Heptachlor         S18-No16633         NCP         %         121         70-130         Pass            Heptachlor epoxide         S18-No16633         NCP         %         88         70-130         Pass            Heptachlor obenzene         S18-No16633         NCP         %         90         70-130         Pass   | Endosulfan I                     | S18-No16633     | NCP          | %     | 103      |      | 70-130               | Pass           |                    |
| Endosulfan sulphate         S18-No16633         NCP         %         81         70-130         Pass           Endrin         S18-No16633         NCP         %         88         70-130         Pass            Endrin         S18-No16633         NCP         %         88         70-130         Pass            Endrin aldehyde         S18-No16633         NCP         %         74         70-130         Pass            Endrin ketone         S18-No16633         NCP         %         76         70-130         Pass            g-BHC (Lindane)         S18-No16633         NCP         %         76         70-130         Pass            Heptachlor         S18-No16633         NCP         %         88         70-130         Pass            Heptachlor         S18-No16633         NCP         %         88         70-130         Pass            Heptachlor epoxide         S18-No16633         NCP         %         88         70-130         Pass            Hexachlorobenzene         S18-No16633         NCP         %         90         70-130         Pass  | Endosulfan II                    | S18-No16633     | NCP          | %     | 74       |      | 70-130               | Pass           |                    |
| Endrin         S18-No16633         NCP         %         88         70-130         Pass           Endrin aldehyde         S18-No16633         NCP         %         74         70-130         Pass            Endrin aldehyde         S18-No16633         NCP         %         74         70-130         Pass            Endrin ketone         S18-No16633         NCP         %         76         70-130         Pass            g-BHC (Lindane)         S18-No16633         NCP         %         121         70-130         Pass            Heptachlor         S18-No16633         NCP         %         88         70-130         Pass            Heptachlor epoxide         S18-No16633         NCP         %         88         70-130         Pass           Hexachlorobenzene         S18-No16633         NCP         %         90         70-130         Pass  | Endosulfan sulphate              | S18-No16633     | NCP          | %     | 81       |      | 70-130               | Pass           |                    |
| Endrin aldehyde         S18-No16633         NCP         %         74         70-130         Pass           Endrin ketone         S18-No16633         NCP         %         76         70-130         Pass           g-BHC (Lindane)         S18-No16633         NCP         %         121         70-130         Pass           Heptachlor         S18-No16633         NCP         %         88         70-130         Pass           Heptachlor epoxide         S18-No16633         NCP         %         88         70-130         Pass           Heptachlor opoxide         S18-No16633         NCP         %         90         70-130         Pass           Hexachlorobenzene         S18-No16633         NCP         %         124         70-130         Pass   | Endrin                           | S18-No16633     | NCP          | %     | 88       |      | 70-130               | Pass           |                    |
| Endrin ketone         S18-No16633         NCP         %         76         70-130         Pass           g-BHC (Lindane)         S18-No16633         NCP         %         121         70-130         Pass           Heptachlor         S18-No16633         NCP         %         88         70-130         Pass           Heptachlor epoxide         S18-No16633         NCP         %         90         70-130         Pass           Hexachlorobenzene         S18-No16633         NCP         %         90         70-130         Pass   | Endrin aldehyde                  | S18-No16633     | NCP          | %     | 74       |      | 70-130               | Pass           |                    |
| g-BHC (Lindane)         S18-No16633         NCP         %         121         70-130         Pass           Heptachlor         S18-No16633         NCP         %         88         70-130         Pass           Heptachlor epoxide         S18-No16633         NCP         %         90         70-130         Pass           Heptachlor opoxide         S18-No16633         NCP         %         90         70-130         Pass           Hexachlorobenzene         S18-No16633         NCP         %         124         70-130         Pass   | Endrin ketone                    | S18-No16633     | NCP          | %     | 76       |      | 70-130               | Pass           |                    |
| Heptachlor         S18-No16633         NCP         %         88         70-130         Pass           Heptachlor epoxide         S18-No16633         NCP         %         90         70-130         Pass           Hexachlorobenzene         S18-No16633         NCP         %         124         70-130         Pass   | g-BHC (Lindane)                  | S18-No16633     | NCP          | %     | 121      |      | 70-130               | Pass           |                    |
| Heptachlor epoxideS18-No16633NCP%9070-130PassHexachlorobenzeneS18-No16633NCP%12470-130Pass  | Heptachlor                       | S18-No16633     | NCP          | %     | 88       |      | 70-130               | Pass           |                    |
| HexachlorobenzeneS18-No16633NCP%12470-130Pass   | Heptachlor epoxide               | S18-No16633     | NCP          | %     | 90       |      | 70-130               | Pass           |                    |
|   | Hexachlorobenzene                | S18-No16633     | NCP          | %     | 124      |      | 70-130               | Pass           |                    |
| Methoxychlor M18-No14233 NCP % 123 70-130 Pass  | Methoxychlor                     | M18-No14233     | NCP          | %     | 123      |      | 70-130               | Pass           |                    |



| Spike - 5, Recovery         Result 1         NC         Result 1         NC  | Test                             | Lab Sample ID   | QA<br>Source | Units | Result 1 |          |     | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|---|----------------------------------|-----------------|--------------|-------|----------|----------|-----|----------------------|----------------|--------------------|
| Organophosphorus Pesticides         T         Result         I        <   | Spike - % Recovery               | 1               | 1            |       |          |          |     |                      |                |                    |
| Diazinon         S18-N014513         NCP         %         108          70-130         Pass           Enion         S18-N014513         NCP         %         88         <  | Organophosphorus Pesticides      | I               |              |       | Result 1 |          |     |                      |                |                    |
| Dimethoda         S14-N14513         NCP         %         95         Part 70-130         Pass           Fenitrotinion         S14-N14513         NCP         %         92         I         70-130         Pass           Shike - K         S18-N014513         NCP         %         92         I         70-130         Pass           Shike - K         Stervorty         K         92         I         70-130         Pass           Shike - K         Recourt         K         96         I         70-130         Pass           Shike - K         Recourt         K         96         I         70-130         Pass           Shike - K         Recourt         K         96         I         70-130         Pass           I.1-Dickhorechane         S18-N13762         NCP         %         96         I         70-130         Pass           I.2-Dickhorechane         S18-N13762         NCP         %         92         I         70-130         Pass           I.2-Dickhorechane         S18-N14762         NCP         %         92         I         70-130         Pass           I.2-Dickhorechane         S18-N14767         NCP         %         92   | Diazinon                         | S18-No14513     | NCP          | %     | 108      |          |     | 70-130               | Pass           |                    |
| Ethion         S18-No14313         NCP         %         88         70-130         Pass           Metry parathion         S18-No14513         NCP         %         82         70-130         Pass           Splke - % Recovery         Result 1         Result 1         70-130         Pass           Polychlorinated Biphenyls         NCP         %         96         70-130         Pass           Splke - % Recovery         Result 1         70-130         Pass         70-130         Pass           Valid Organics         NCP         %         96         70-130         Pass         70-130         Pass           1.1.0-thioroethene         S18-No13762         NCP         %         86         70-130         Pass           1.2-Dichiorobenene         S18-No13762         NCP         %         92         70-130         Pass           1.2-Dichiorobenene         S18-No13762         NCP         %         92         70-130         Pass           Trichioroethene         S18-No13762         NCP         %         92         70-130         Pass           Trichioroethene         S18-No13762         NCP         %         82         70-130         Pass           Trichioroethene </td <td>Dimethoate</td> <td>S18-No14513</td> <td>NCP</td> <td>%</td> <td>95</td> <td></td> <td></td> <td>70-130</td> <td>Pass</td> <td></td>  | Dimethoate                       | S18-No14513     | NCP          | %     | 95       |          |     | 70-130               | Pass           |                    |
| Fenitorion         S18-No14513         NCP         %         92         Protection         Protection           Spike - % Recovery         V         %         82         70-130         Pass           Acador-1200         S18-No14523         NCP         %         96         70-130         Pass           Spike - % Recovery         V         96         70-130         Pass         70-130         Pass           Spike - % Recovery         Valite Organois         Result 1         NCP         %         96         70-130         Pass           1.1-Dichloroshene         S18-N013762         NCP         %         94         70-130         Pass           1.2-Dichloroshane         S18-N013762         NCP         %         92         70-130         Pass           Trichioroshane         S18-N013762         NCP         %         92         70-130         Pass           Spike - % Recovery         Total Recoverable Hydrocarbons - 1999 NEPM Fractions         Result 1         No         70-130         Pass           TRH >0.016.16         S18-N01470         CP         %         92         70-130         Pass           Spike - % Recovery         Total Recoverable Hydrocarbons - 1999 NEPM Fractions         Result 1 <td>Ethion</td> <td>S18-No14513</td> <td>NCP</td> <td>%</td> <td>88</td> <td></td> <td></td> <td>70-130</td> <td>Pass</td> <td></td>  | Ethion                           | S18-No14513     | NCP          | %     | 88       |          |     | 70-130               | Pass           |                    |
| Methy parathion         S18-10/1453         ICP         %         82         70-130         Pass           Polychiorinated Biphonyis          Result 1                 Pass          Pass         Pass         Pass         Pass          Pass          Pass         Pass          Pass          Pass          Pass          Pass          Pass          Pass          Pass          Pass          Pass           Pass          Pass           Pass           Pass           Pass           Pass           Pass           Pass           Pass           Pass           Pass           Pass           Pass          Pass          Pass          Pass           Pass          Pass          Pass          Pas   | Fenitrothion                     | S18-No14513     | NCP          | %     | 92       |          |     | 70-130               | Pass           |                    |
| Spike - ½         Recovery         Resourd  | Methyl parathion                 | S18-No14513     | NCP          | %     | 82       |          |     | 70-130               | Pass           |                    |
| Polychkorinated Biphenyis         Result 1         Res   | Spike - % Recovery               |                 |              |       | 1        | 1        |     |                      |                |                    |
| Arcolor.1260         S18-No14523         NCP         %         96         To1-10         Pass           Valail Organics         S18-No13762         NCP         %         86         70-130         Pass           1.1-Dichloroethane         S18-No13762         NCP         %         94         70-130         Pass           1.2-Dichloroethane         S18-No13762         NCP         %         94         70-130         Pass           1.2-Dichloroethane         S18-No13762         NCP         %         94         70-130         Pass           1.2-Dichloroethane         S18-No13762         NCP         %         92         70-130         Pass           Spike -%         Recoversible Hydrocarbons - 1999 NEPM Fractions         Result 1         No         No         No         Pass           TRH C10-C14         S18-No14970         CP         %         93         No         70-130         Pass           Spike -%         Recovery         T         Result 1         No         No         75-130         Pass           Cadmium         S18-No14970         CP         %         93         No         75-125         Pass           Cadmium         S18-No14970         CP         <  | Polychlorinated Biphenyls        |                 |              |       | Result 1 |          |     |                      |                |                    |
| Spike -%         Recovery         Result 1         Normal Action of the set of the          | Aroclor-1260                     | S18-No14523     | NCP          | %     | 96       |          |     | 70-130               | Pass           |                    |
| Volatile Organics         Result 1         Image: Constraint of the second secon | Spike - % Recovery               |                 |              |       | 1        |          |     |                      | 1              |                    |
| 11-Dichlorosthane       S18-N013762       NCP       %       73       70-130       Pass         1.1-Trichlorosthane       S18-N013762       NCP       %       86       70-130       Pass         1.2-Dichlorosthane       S18-N013762       NCP       %       94       70-130       Pass         1.2-Dichlorosthane       S18-N013762       NCP       %       94       70-130       Pass         Trichlorosthane       S18-N013762       NCP       %       82       70-130       Pass         Spike -% Recovery       Trichlorosthane       S18-N014970       CP       %       82       70-130       Pass         TRH C10-C16       S18-N014970       CP       %       82       70-130       Pass         Spike -% Recovery        Result 1          Pass         TRH C10-C16       S18-N014970       CP       %       99       75-125       Pass         Cadmium       S18-N014970       CP       %       96       75-125       Pass         Cadmium       S18-N014970       CP       %       96       75-125       Pass         Cadmium       S18-N014970       CP       %       96       75-125   | Volatile Organics                | I               |              |       | Result 1 |          |     |                      |                |                    |
| 1.1.1-Trichtoroethane       S18-N013762       NCP       %       86       70.130       Pass         1.2-Dichtoroethane       S18-N013762       NCP       %       108       70.130       Pass         1.2-Dichtoroethane       S18-N013762       NCP       %       108       70.130       Pass         Trichtoroethane       S18-N013762       NCP       %       92       70.130       Pass         Trichtoroethane       S18-N013762       NCP       %       92       70.130       Pass         Total Recoverable Hydrocarbons - 0099 NEPM Fractions       Result 1        | 1.1-Dichloroethene               | S18-No13762     | NCP          | %     | 73       |          |     | 70-130               | Pass           |                    |
| 1.2-Dichlorobenzene       S18-No13762       NCP       %       94       70-130       Pass         Trichloroethene       S18-No13762       NCP       %       92       70-130       Pass         Spike - % Recovery       Trichloroethene       S18-No13762       NCP       %       92       70-130       Pass         Trichloroethene       S18-No13762       NCP       %       92       70-130       Pass         Spike - % Recovery       Total Recoverable Mydrocarbons - 1999 NEPM Fracture       Result 1       1       70-130       Pass         Spike - % Recovery       Total Recoverable Mydrocarbons - 2013 NEPM Fracture       Result 1       1       70-130       Pass         TRH >C10-C16       S18-No14970       CP       %       99       70-130       Pass         Cadmium       S18-No14970       CP       %       97       75-125       Pass         Chomium       S18-No14970       CP       %       96       75-125       Pass         Chomium       S18-No14970       CP       %       98       75-125       Pass         Chomium       S18-No14970       CP       %       98       75-125       Pass         Coppar       S18-No14970       CP </td <td>1.1.1-Trichloroethane</td> <td>S18-No13762</td> <td>NCP</td> <td>%</td> <td>86</td> <td></td> <td></td> <td>70-130</td> <td>Pass</td> <td></td>  | 1.1.1-Trichloroethane            | S18-No13762     | NCP          | %     | 86       |          |     | 70-130               | Pass           |                    |
| 1.2-Dichloroethane       S18-No13762       NCP       %       108       70-130       Pass         Trichloroethane       S18-No13762       NCP       %       92       70-130       Pass         Spike - % Recovery       rot-1309       NEPM Fractors       Result 1       1       1       1         TRH C10-C14       S18-No14970       CP       %       82       70-130       Pass         Spike - % Recovery       rot-130       NEPM Fractors       Result 1       1       1       1         TRH >C10-C16       S18-No14970       CP       %       99       70-130       Pass       1         Arsenic       S18-No14970       CP       %       99       70-130       Pass       1         Cadmium       S18-No14970       CP       %       96       75-125       Pass       1   | 1.2-Dichlorobenzene              | S18-No13762     | NCP          | %     | 94       |          |     | 70-130               | Pass           |                    |
| Trichlorothene         S18-No13762         NCP         %         92         70-130         Pass           Spike - % Recovery         Total Recoverable Hydrocarbons - 1999 NEPM Fractions         Result 1           70-130         Pass           TRH C10-C14         S18-No14970         CP         %         82          70-130         Pass           Spike - % Recovery           70-130         Pass             TRH 20-C16         S18-No14970         CP         %         99          70-130         Pass           Spike - % Recovery           Result 1               Arsenic         S18-No14970         CP         %         96          75-125         Pass           Cadmium         S18-No14970         CP         %         96          75-125         Pass           Cadmium         S18-No14970         CP         %         96          75-125         Pass           Cadmium         S18-No14970         CP         %         86          70-130         Pass           Lead         S18-No14970         CP  | 1.2-Dichloroethane               | S18-No13762     | NCP          | %     | 108      |          |     | 70-130               | Pass           |                    |
| Spike -% Recovery         Result 1         Result 1 <td>Trichloroethene</td> <td>S18-No13762</td> <td>NCP</td> <td>%</td> <td>92</td> <td></td> <td></td> <td>70-130</td> <td>Pass</td> <td></td>  | Trichloroethene                  | S18-No13762     | NCP          | %     | 92       |          |     | 70-130               | Pass           |                    |
| Total Recoverable Hydrocarbons - 1999 NEPM Fractions         Result 1         Image: Control of the second s | Spike - % Recovery               |                 |              |       | 1        | 1        |     |                      |                |                    |
| TRH C10-C14         S18-No14970         CP         %         82         70-130         Pass           Spike -% Recovery         S18-No14970         CP         %         99         0         70-130         Pass           TRH >C10-C16         S18-No14970         CP         %         99         0         70-130         Pass           Spike -% Recovery  | Total Recoverable Hydrocarbons - | 1999 NEPM Fract | ions         |       | Result 1 |          |     |                      |                |                    |
| Spike -% Recovery         Result         Image: Constraint of the second  | TRH C10-C14                      | S18-No14970     | CP           | %     | 82       |          |     | 70-130               | Pass           |                    |
| Total Recoverable Hydrocarbons - 2013 MEPM Fractions         Result 1         Image: Control 1         Term - 1   | Spike - % Recovery               |                 |              |       | 1        | 1        |     |                      |                |                    |
| TRH SC10-C16         S18-No14970         CP         %         99         TO-130         Pass           Spike % Recovery         Result 1          70-130         Pass           Arsenic         S18-No14970         CP         %         97         C         75-125         Pass           Cadmium         S18-No14970         CP         %         96         C         75-125         Pass           Chromium         S18-No14970         CP         %         96         C         75-125         Pass           Copper         S18-No14970         CP         %         96         C         75-125         Pass           Mercury         S18-No14970         CP         %         96         C         75-125         Pass           Nickel         S18-No14970         CP         %         89         C         75-125         Pass           Nickel         S18-No14970         CP         %         86         91         C         75-125         Pass           Organophoryne Setticides         S18-No13245         NCP         %         84         C         70-130         Pass           Duplicate         Lab Sample DI         GA         Ga  | Total Recoverable Hydrocarbons - | 2013 NEPM Fract | ions         |       | Result 1 |          |     |                      |                |                    |
| Spike '% Recovery         Result 1         Result 1         Result 1         Total 1 <t< td=""><td>TRH &gt;C10-C16</td><td>S18-No14970</td><td>CP</td><td>%</td><td>99</td><td></td><td></td><td>70-130</td><td>Pass</td><td></td></t<>   | TRH >C10-C16                     | S18-No14970     | CP           | %     | 99       |          |     | 70-130               | Pass           |                    |
| Heary Metals         Sevent 1         Image: Constraint 1         Result 1         Image: Constraint 1         Total 2         Pass 1           Arsenic         S18-No14970         CP         %         97         Image: Constraint 1         Pass 1           Cadmium         S18-No14970         CP         %         96         Image: Constraint 1         Pass 1           Copper         S18-No14970         CP         %         93         Image: Constraint 1         Pass 1           Lead         S18-No14970         CP         %         96         Image: Constraint 1         Pass 1           Mercury         S18-No14970         CP         %         96         Image: Constraint 1         Pass 1           Nickel         S18-No14970         CP         %         91         Image: Constraint 1         Pass 1           Sike-Watcovery         S18-No14970         CP         %         86         Image: Constraint 1         Pass 1         Pass 1           Meinphos         S18-No14970         CP         %         84         Image: Constraint 1         Pass 1         Pass 1           Meinphos         S18-No14970         CP         %         84         Image: Constraint 1         Pass 1         Pass 1 <tr< td=""><td colspan="5">Spike - % Recovery</td><td></td><td></td><td>1</td><td></td><td></td></tr<>  | Spike - % Recovery               |                 |              |       |          |          |     | 1                    |                |                    |
| Arsenic         S18-No14970         CP         %         97          75-125         Pass           Cadmium         S18-No14970         CP         %         96          75-125         Pass           Chromium         S18-No14970         CP         %         96          75-125         Pass           Copper         S18-No14970         CP         %         96          75-125         Pass           Lead         S18-No14970         CP         %         96          75-125         Pass           Mercury         S18-No14970         CP         %         89          75-125         Pass           Nickel         S18-No14970         CP         %         86          75-125         Pass           Zinc         S18-No14970         CP         %         86           75-125         Pass           Mercury         S18-No14970         CP         %         86           75-125         Pass           Mercury         S18-No13245         NCP         %         864           70-130         Past           Test  | Heavy Metals                     | 1               |              |       | Result 1 |          |     |                      |                |                    |
| Cadmium         S18-No14970         CP         %         96         75-125         Pass           Chromium         S18-No14970         CP         %         96         75-125         Pass           Copper         S18-No14970         CP         %         93         CP         75-125         Pass           Lead         S18-No14970         CP         %         96         CP         75-125         Pass           Mercury         S18-No14970         CP         %         89         CP         75-125         Pass           Nickel         S18-No14970         CP         %         89         CP         75-125         Pass           Silke-W         S18-No14970         CP         %         86         CP         75-125         Pass           Silke - % Recovery         CP         %         86         CP         75-125         Pass         CP           Meinphos         S18-No13245         NCP         %         84         CP         70-130         Pass         CP           Meinphos         S18-No13245         NCP         %         Result 1         Result 1         Result 1         Mercupation 1         Maiso 100         QA         Pass   | Arsenic                          | S18-No14970     | CP           | %     | 97       |          |     | 75-125               | Pass           |                    |
| Chromium         S18-No14970         CP         %         96         75-125         Pass           Copper         S18-No14970         CP         %         93         75-125         Pass           Lead         S18-No14970         CP         %         96         76-125         Pass           Mercury         S18-No14970         CP         %         89         70-130         Pass           Nickel         S18-No14970         CP         %         89         70-130         Pass           Site-No14970         CP         %         91         75-125         Pass         75-125           Site-No14970         CP         %         91          75-125         Pass           Copper         S18-No14970         CP         %         84          75-125         Pass           Site-No14970         CP         %         84          75-125         Pass         75-125           Site-No14970         CP         %         84          70-130         Pass           Opticate         Lab Sample ID         QA         Units         Result 1         Result 2         RPD         Fass         Quifrying   | Cadmium                          | S18-No14970     | CP           | %     | 96       |          |     | 75-125               | Pass           |                    |
| Copper         S18-No14970         CP         %         93         75-125         Pass           Lead         S18-No14970         CP         %         96         75-125         Pass           Mercury         S18-No14970         CP         %         89         C         75-125         Pass           Mickel         S18-No14970         CP         %         89         C         75-125         Pass           Zinc         S18-No14970         CP         %         86         C         75-125         Pass           Spike-%         Recovery          Result 1         C         75-125         Pass         C           Organophosphorus Pesticides         S18-No14970         CP         %         86         C         70-130         Pass           Mevinphos         S18-No13245         NCP         %         84         C         70-130         Pass           Duplicate         Lab Sample ID         Source         Units         Result 1         Result 2         RPD         Imits         Qualifying           TRH C10-C14         M18-No15527         NCP         mg/kg         <20   | Chromium                         | S18-No14970     | CP           | %     | 96       |          |     | 75-125               | Pass           |                    |
| Lead         S18-No14970         CP         %         96          75-125         Pass           Mercury         S18-No14970         CP         %         89         .         70-130         Pass           Nickel         S18-No14970         CP         %         86         .         .         75-125         Pass           Sile-No14970         CP         %         86         .         .         .         75-125         Pass           Sile-No14970         CP         %         86         .         .         .         .         .           Sile-No14970         CP         %         86         .         .         .         .         .         .           Sile-No1326         NCP         %         84         .         .         .         .         .         .           Merophos         Sile-No1326         NCP         MG         .  | Copper                           | S18-No14970     | CP           | %     | 93       |          |     | 75-125               | Pass           |                    |
| Mercury         S18-No14970         CP         %         89          70-130         Pass           Nickel         S18-No14970         CP         %         91          75-125         Pass            Zinc         S18-No14970         CP         %         86          75-125         Pass            Spike-% Recovery          Result 1           70-130         Pass            Mevinphos         S18-No13245         NCP         %         84          70-130         Pass            Mevinphos         S18-No13245         NCP         %         84          70-130         Pass            Mevinphos         S18-No13245         NCP         %         84          70-130         Pass            Mishop         Qualifying         Qualifying         Cualifying          Result 1         Result 2         RPD  | Lead                             | S18-No14970     | CP           | %     | 96       |          |     | 75-125               | Pass           |                    |
| Nickel         S18-No14970         CP         %         91          75-125         Pass           Zinc         S18-No14970         CP         %         86          75-125         Pass           Spike -% Recovery          Result 1         86          75-125         Pass           Organophosphorus Pesticides          Result 1           70-130         Pass           Mevinphos         S18-No13245         NCP         %         84          70-130         Pass           Duplicate         Lab Sample ID         QA<br>Source         Units         Result 1         Result 2         RPD         Result 2         Pass         Qualifying Code           TRH C10-C14         M18-No15527         NCP         mg/kg         <20  | Mercury                          | S18-No14970     | CP           | %     | 89       |          |     | 70-130               | Pass           |                    |
| Zinc         S18-No14970         CP         %         86         (75.125)         Pass           Spike - % Recovery         S         Spike - % Recovery         Recovers         Result 1         (75.125)         Pass         (75.125)         (75.125)         (75.125)         Pass         (75.125)         Pass         (75.125)         (75.125)         Pass         (75.125)         (75.125)         Pass         (75.125)         (75.125)         Pass         (75.125)         (75.125)         (75.125)         (75.125)         (75.125)         (75.125)         (75.125)         (75.125)         (75.125)         (75.125)         (75.125)  | Nickel                           | S18-No14970     | CP           | %     | 91       |          |     | 75-125               | Pass           |                    |
| Spike - % Recovery         Result 1         Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6"           Mevinphos         S18-No13245         NCP         % 84         C         70-130         Pass         Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6"Colspan  | Zinc                             | S18-No14970     | CP           | %     | 86       |          |     | 75-125               | Pass           |                    |
| Organophosphorus Pesticides         St8-No13245         NCP         %         84         Image: Marcine State St                            | Spike - % Recovery               |                 |              |       | -        |          |     | 1                    |                |                    |
| MevinphosS18-No13245NCP%8470-130Pass70-130PassTestLab Sample IDQA<br>QAUnitsResult 1Result 1ImageAcceptance<br>LimitsPassCualifying<br>LimitsDuplicateVResult 1Result 2RPDImageS18-No13245NCPMg/kg<20<20<1030%PassCualifying<br>LimitsTotal Recoverable Hydrocarbons - J999 NEPM FractionsNCPmg/kg<20<20<1030%PassCualifying<br>LimitsCualifying<br>LimitsTRH C10-C14M18-No15527NCPmg/kg<20<20<1130%PassCualifying<br>LimitsQualifying<br>LimitsTRH C10-C14M18-No15527NCPmg/kg<20<20<130%PassQualifying<br>LimitsQualifying<br>LimitsDuplicateVmg/kg<20<20<10<130%PassQualifying<br>LimitsQualifying<br>LimitsQualifying<br>LimitsDuplicateVmg/kg<20<20<10<108430%FailQualifying<br>LimitsTRH >C10-C16M18-No15527NCPmg/kg<50<50<130%Pass<10TRH >C10-C16M18-No15527NCPmg/kg<2001406830%FailQualifyingTRH >C10-C16M18-No15527NCPmg/kg<200<10<10<10<10<10C10-C16 <th< td=""><td>Organophosphorus Pesticides</td><td>1</td><td></td><td></td><td>Result 1</td><td></td><td></td><td></td><td></td><td></td></th<>   | Organophosphorus Pesticides      | 1               |              |       | Result 1 |          |     |                      |                |                    |
| TestLab Sample IDQA<br>SourceUnitsResult 1InitsAcceptance<br>LimitsPass<br>CodeQualifying<br>CodeDuplicateTotal Recoverable Hydrocarbons - 199 NEPM FractioneTRH C10-C14M18-No15527NCPMgkg<20   | Mevinphos                        | S18-No13245     | NCP          | %     | 84       |          |     | 70-130               | Pass           |                    |
| Duplicate         Desire         Result 1         Result 2         RPD         Constraints           Total Recoverable Hydrocarbons - 1999 NEPM Fractions         NCP         mg/kg         < 20         < 20         < 1         30%         Pass            TRH C10-C14         M18-No15527         NCP         mg/kg         < 20         < 20         < 1         30%         Pass          Q15           TRH C15-C28         M18-No15527         NCP         mg/kg         160         89         56         30%         Fail         Q15           TRH C29-C36         M18-No15527         NCP         mg/kg         170         69         84         30%         Fail         Q15           Duplicate   | Test                             | Lab Sample ID   | QA<br>Source | Units | Result 1 |          |     | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
| Total Recoverable Hydrocarbons - J999 NEPM Fractions         Result 1         Result 2         RPD         Image: Constraint of the c                   | Duplicate                        | I               |              |       | 1        | 1        |     |                      |                |                    |
| TRH C10-C14         M18-No15527         NCP         mg/kg         < 20         < 20         < 1         30%         Pass           TRH C15-C28         M18-No15527         NCP         mg/kg         160         89         56         30%         Fail         Q15           TRH C29-C36         M18-No15527         NCP         mg/kg         170         69         84         30%         Fail         Q15           Duplicate         Tr         Total Recoverable Hydrocarbons - 2013 NEPM Fractions         Result 1         Result 2         RPD         M         M           TRH >C10-C16         M18-No15527         NCP         mg/kg         <50   | Total Recoverable Hydrocarbons - | 1999 NEPM Fract | ions         |       | Result 1 | Result 2 | RPD |                      |                |                    |
| TRH C15-C28         M18-No15527         NCP         mg/kg         160         89         56         30%         Fail         Q15           TRH C29-C36         M18-No15527         NCP         mg/kg         170         69         84         30%         Fail         Q15           Duplicate   | TRH C10-C14                      | M18-No15527     | NCP          | mg/kg | < 20     | < 20     | <1  | 30%                  | Pass           |                    |
| TRH C29-C36         M18-No15527         NCP         mg/kg         170         69         84         30%         Fail         Q15           Duplicate         Total Recoverable Hydrocarbons - 2013 NEPM Fractions         X         Result 1         Result 2         RPD         M         M           TRH >C10-C16         M18-No15527         NCP         mg/kg         <50  | TRH C15-C28                      | M18-No15527     | NCP          | mg/kg | 160      | 89       | 56  | 30%                  | Fail           | Q15                |
| Duplicate         Result 1         Result 2         RPD         Image: Constraint of the second s                   | TRH C29-C36                      | M18-No15527     | NCP          | ma/ka | 170      | 69       | 84  | 30%                  | Fail           | Q15                |
| Total Recoverable Hydrocarbons - 2013 NEPM Fractions         Result 1         Result 2         RPD         Image: Constraint of the state of                    | Duplicate                        |                 |              |       |          |          |     |                      |                |                    |
| TRH >C10-C16         M18-No15527         NCP         mg/kg         < 50         < 1         30%         Pass           TRH >C16-C34         M18-No15527         NCP         mg/kg         290         140         68         30%         Fail         Q15           TRH >C34-C40         M18-No15527         NCP         mg/kg         < 100  | Total Recoverable Hydrocarbons - | 2013 NEPM Fract | ions         |       | Result 1 | Result 2 | RPD |                      |                |                    |
| TRH >C16-C34         M18-No15527         NCP         mg/kg         290         140         68         30%         Fail         Q15           TRH >C34-C40         M18-No15527         NCP         mg/kg         <100  | TRH >C10-C16                     | M18-No15527     | NCP          | ma/ka | < 50     | < 50     | <1  | 30%                  | Pass           |                    |
| TRH >C34-C40         M18-No15527         NCP         mg/kg         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100         < 100  | TRH >C16-C34                     | M18-No15527     | NCP          | ma/ka | 290      | 140      | 68  | 30%                  | Fail           | Q15                |
| Duplicate         Result 1         Result 2         RPD         Control         Control <t< td=""><td>TRH &gt;C34-C40</td><td>M18-No15527</td><td>NCP</td><td>ma/ka</td><td>&lt; 100</td><td>&lt; 100</td><td>&lt;1</td><td>30%</td><td>Pass</td><td></td></t<>   | TRH >C34-C40                     | M18-No15527     | NCP          | ma/ka | < 100    | < 100    | <1  | 30%                  | Pass           |                    |
| Polycyclic Aromatic Hydrocarbons         Result 1         Result 2         RPD         Mesult 2         RPD           Acenaphthene         S18-No14520         NCP         mg/kg         < 0.5  | Duplicate                        |                 |              | 33    |          |          |     |                      |                |                    |
| Acenaphthene         S18-No14520         NCP         mg/kg         < 0.5         < 1         30%         Pass           Acenaphthylene         S18-No14520         NCP         mg/kg         < 0.5  | Polycyclic Aromatic Hydrocarbons | <br>}           |              |       | Result 1 | Result 2 | RPD |                      |                |                    |
| Acenaphthylene         S18-No14520         NCP         mg/kg         < 0.5         < 0.5         < 1         30%         Pass           Anthracene         S18-No14520         NCP         mg/kg         < 0.5  | Acenaphthene                     | S18-No14520     | NCP          | ma/ka | < 0.5    | < 0.5    | <1  | 30%                  | Pass           |                    |
| Anthracene         S18-No14520         NCP         mg/kg         < 0.5         < 0.5         < 1         30%         Pass           Benz(a)anthracene         S18-No14520         NCP         mg/kg         < 0.5   | Acenaphthylene                   | S18-No14520     | NCP          | ma/ka | < 0.5    | < 0.5    | <1  | 30%                  | Pass           |                    |
| Benz(a)anthracene         S18-No14520         NCP         mg/kg         < 0.5         < 1         30%         Pass  | Anthracene                       | S18-No14520     | NCP          | ma/ka | < 0.5    | < 0.5    | <1  | 30%                  | Pass           |                    |
|   | Benz(a)anthracene                | S18-No14520     | NCP          | ma/ka | < 0.5    | < 0.5    | <1  | 30%                  | Pass           |                    |
| Benzo(a)pyrene   S18-No14520   NCP   mg/kg   < 0.5   < 0.5   <1   30%   Pass  | Benzo(a)pyrene                   | S18-No14520     | NCP          | mg/kg | < 0.5    | < 0.5    | <1  | 30%                  | Pass           |                    |



| Duplicate                        |              |     |        |           |          |           |      |         |   |
|----------------------------------|--------------|-----|--------|-----------|----------|-----------|------|---------|---|
| Polycyclic Aromatic Hydrocarbons |              |     |        | Result 1  | Result 2 | RPD       |      |         |   |
| Benzo(b&j)fluoranthene           | S18-No14520  | NCP | mg/kg  | < 0.5     | < 0.5    | <1        | 30%  | Pass    |   |
| Benzo(g.h.i)perylene             | S18-No14520  | NCP | mg/kg  | < 0.5     | < 0.5    | <1        | 30%  | Pass    |   |
| Benzo(k)fluoranthene             | S18-No14520  | NCP | mg/kg  | < 0.5     | < 0.5    | <1        | 30%  | Pass    |   |
| Chrysene                         | S18-No14520  | NCP | mg/kg  | < 0.5     | < 0.5    | <1        | 30%  | Pass    |   |
| Dibenz(a.h)anthracene            | S18-No14520  | NCP | mg/kg  | < 0.5     | < 0.5    | <1        | 30%  | Pass    |   |
| Fluoranthene                     | S18-No14520  | NCP | mg/kg  | < 0.5     | < 0.5    | <1        | 30%  | Pass    |   |
| Fluorene                         | S18-No14520  | NCP | mg/kg  | < 0.5     | < 0.5    | <1        | 30%  | Pass    |   |
| Indeno(1.2.3-cd)pyrene           | S18-No14520  | NCP | mg/kg  | < 0.5     | < 0.5    | <1        | 30%  | Pass    |   |
| Naphthalene                      | S18-No14520  | NCP | mg/kg  | < 0.5     | < 0.5    | <1        | 30%  | Pass    |   |
| Phenanthrene                     | S18-No14520  | NCP | mg/kg  | < 0.5     | < 0.5    | <1        | 30%  | Pass    |   |
| Pyrene                           | S18-No14520  | NCP | mg/kg  | < 0.5     | < 0.5    | <1        | 30%  | Pass    |   |
| Duplicate                        |              |     |        | 1         | 1 1      |           |      |         |   |
| Organochlorine Pesticides        |              |     |        | Result 1  | Result 2 | RPD       |      |         |   |
| Chlordanes - Total               | S18-No14522  | NCP | mg/kg  | < 0.1     | < 0.1    | <1        | 30%  | Pass    |   |
| 4.4'-DDD                         | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    |   |
| 4.4'-DDE                         | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    |   |
| 4.4'-DDT                         | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    |   |
| a-BHC                            | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    |   |
| Aldrin                           | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    | ļ |
| b-BHC                            | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    | ļ |
| d-BHC                            | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    |   |
| Dieldrin                         | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    |   |
| Endosulfan I                     | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    |   |
| Endosulfan II                    | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    |   |
| Endosulfan sulphate              | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    |   |
| Endrin                           | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    |   |
| Endrin aldehyde                  | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    |   |
| Endrin ketone                    | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    |   |
| g-BHC (Lindane)                  | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    |   |
| Heptachlor                       | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    |   |
| Heptachlor epoxide               | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    |   |
| Hexachlorobenzene                | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    |   |
| Methoxychlor                     | S18-No14522  | NCP | mg/kg  | < 0.05    | < 0.05   | <1        | 30%  | Pass    |   |
| Ioxaphene                        | S18-N014522  | NCP | mg/kg  | < 1       | < 1      | <1        | 30%  | Pass    |   |
| Duplicate                        |              |     |        | Decilitat | Destrict | DDD       |      | 1       |   |
| Polychiorinated Bipnenyis        | C40 N=44500  | NOD |        | Result 1  | Result 2 | RPD       | 200/ | Dese    |   |
| Aroclor-1016                     | S18-N014522  | NCP | mg/kg  | < 0.1     | < 0.1    | <1        | 30%  | Pass    |   |
| Aroclor-1221                     | S18-IN014522 | NCP | mg/kg  | < 0.1     | < 0.1    | <1        | 30%  | Pass    |   |
| Aroclor 1232                     | S10-IN014522 |     | mg/kg  | < 0.1     | < 0.1    | <1        | 30%  | Pass    |   |
| Aroclor 1242                     | S18 No14522  | NCP | mg/kg  | < 0.1     | < 0.1    | <1        | 30%  | Pass    |   |
| Aroclor 1254                     | S18 No14522  | NCP | mg/kg  | < 0.1     | < 0.1    | <1        | 30%  | Pass    |   |
| Aroclor 1254                     | S18 No14522  |     | mg/kg  | < 0.1     | < 0.1    | <1        | 30%  | Pass    |   |
| Total PCR*                       | S18 No14522  |     | mg/kg  | < 0.1     | < 0.1    | <1        | 30%  | T ass   |   |
|                                  | 310-11014522 | NCF | тіу/ку | < 0.1     | < 0.1    | <1        | 30%  | F d 5 5 |   |
|                                  |              |     |        | Result 1  | Result 2 | PPD       |      |         |   |
| % Moisture                       | S18-No14920  | NCP | %      | 15        | 15       | 40        | 30%  | Pass    |   |
| Duplicate                        | 01011014320  |     | 70     | 1 10      |          | ч.v       | 5070 | 1 433   |   |
| Volatile Organics                |              |     |        | Result 1  | Result 2 | RPD       |      |         |   |
| 1.1-Dichloroethane               | S18-No13761  | NCP | ma/ka  | < 0.5     | < 0.5    | <1        | 30%  | Pass    |   |
| 1 1-Dichloroethene               | S18-No13761  | NCP | ma/ka  | < 0.5     | < 0.5    | <u>دا</u> | 30%  | Pass    |   |
| 1.1.1-Trichloroethane            | S18-No13761  | NCP | ma/ka  | < 0.5     | < 0.5    | <1        | 30%  | Pass    |   |
| 1.1.1.2-Tetrachloroethane        | S18-No13761  | NCP | ma/ka  | < 0.5     | < 0.5    | <1        | 30%  | Pass    |   |
| 1.1.2-Trichloroethane            | S18-No13761  | NCP | ma/ka  | < 0.5     | < 0.5    | <1        | 30%  | Pass    |   |
|                                  |              |     |        |           |          |           |      |         |   |



| Duplicate  |                 |      |          |          |          |          |      |       |  |
|--|-----------------|------|----------|----------|----------|----------|------|-------|--|
| Volatile Organics                                  |                 |      |          | Result 1 | Result 2 | RPD      |      |       |  |
| 1.1.2.2-Tetrachloroethane                          | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| 1.2-Dibromoethane                                  | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| 1.2-Dichlorobenzene                                | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| 1.2-Dichloroethane                                 | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| 1.2-Dichloropropane                                | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| 1.2.3-Trichloropropane                             | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| 1.2.4-Trimethylbenzene                             | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| 1.3-Dichlorobenzene                                | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| 1.3-Dichloropropane                                | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| 1.3.5-Trimethylbenzene                             | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| 1.4-Dichlorobenzene                                | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| 2-Butanone (MEK)                                   | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| 2-Propanone (Acetone)                              | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| 4-Chlorotoluene                                    | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| 4-Methyl-2-pentanone (MIBK)                        | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Allyl chloride                                     | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Bromobenzene                                       | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Bromochloromethane                                 | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Bromodichloromethane                               | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Bromoform  | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Bromomethane                                       | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Carbon disulfide                                   | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Carbon Tetrachloride                               | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Chlorobenzene                                      | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Chloroethane                                       | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Chloroform   | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Chloromethane                                      | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| cis-1 2-Dichloroethene                             | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| cis-1 3-Dichloropropene                            | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Dibromochloromethane                               | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Dibromomethane                                     | S18-No13761     | NCP  | mg/kg    | < 0.0    | < 0.5    | <1       | 30%  | Pass  |  |
| Dichlorodifluoromethane                            | S18-No13761     | NCP  | mg/kg    | < 0.0    | < 0.5    | <1       | 30%  | Pass  |  |
| Iodomethane  | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Isopropyl benzene (Cumene)                         | S18-No13761     | NCP  | mg/kg    | < 0.0    | < 0.5    | <1       | 30%  | Pass  |  |
| Methylene Chloride                                 | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Styrene  | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Tetrachloroethene                                  | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| trans-1 2-Dichloroethene                           | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| trans-1.3-Dichloropropene                          | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Trichloroethene                                    | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Trichlorofluoromethane                             | S18-No13761     | NCP  | ma/ka    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Vinvl chloride                                     | S18-No13761     | NCP  | mg/kg    | < 0.5    | < 0.5    | <1       | 30%  | Pass  |  |
| Duplicate  |                 |      | iiig/itg | < 0.0    | < 0.0    | <b>N</b> | 0070 | 1 400 |  |
|  |                 |      |          | Result 1 | Result 2 | RPD      |      |       |  |
| % Clay   | M18-Oc24970     | NCP  | %        | 8.8      | 8.8      | <1       | 30%  | Pass  |  |
| Conductivity (1:5 aqueous extract                  | W10 0024070     | NOI  | 70       | 0.0      | 0.0      |          | 0070 | 1 400 |  |
| at 25°C as rec.)                                   | S18-No16804     | NCP  | uS/cm    | 80       | 110      | 28       | 30%  | Pass  |  |
| pH (units)(1:5 soil:CaCl2 extract at 25°C as rec.) | S18-No16804     | NCP  | pH Units | 7.1      | 7.2      | pass     | 30%  | Pass  |  |
| Total Organic Carbon                               | S18-No14968     | CP   | %        | 0.1      | < 0.1    | 9.3      | 30%  | Pass  |  |
| Duplicate  |                 |      |          |          |          |          |      |       |  |
| Heavy Metals                                       | [               |      |          | Result 1 | Result 2 | RPD      |      |       |  |
| Iron (%)   | M18-No15610     | NCP  | %        | 5.5      | 5.4      | 2.0      | 30%  | Pass  |  |
| Duplicate  |                 |      |          |          |          |          |      |       |  |
| Total Recoverable Hydrocarbons -                   | 1999 NEPM Fract | ions |          | Result 1 | Result 2 | RPD      |      |       |  |
| TRH C6-C9  | S18-No14969     | CP   | mg/kg    | < 20     | < 20     | <1       | 30%  | Pass  |  |



| Duplicate                        |                 |      |          |          |          |      |     |      |  |
|----------------------------------|-----------------|------|----------|----------|----------|------|-----|------|--|
| втех                             |                 |      |          | Result 1 | Result 2 | RPD  |     |      |  |
| Benzene                          | S18-No14969     | CP   | mg/kg    | < 0.1    | < 0.1    | <1   | 30% | Pass |  |
| Toluene                          | S18-No14969     | CP   | mg/kg    | < 0.1    | < 0.1    | <1   | 30% | Pass |  |
| Ethylbenzene                     | S18-No14969     | CP   | mg/kg    | < 0.1    | < 0.1    | <1   | 30% | Pass |  |
| m&p-Xylenes                      | S18-No14969     | CP   | mg/kg    | < 0.2    | < 0.2    | <1   | 30% | Pass |  |
| o-Xylene                         | S18-No14969     | CP   | mg/kg    | < 0.1    | < 0.1    | <1   | 30% | Pass |  |
| Xylenes - Total                  | S18-No14969     | CP   | mg/kg    | < 0.3    | < 0.3    | <1   | 30% | Pass |  |
| Duplicate                        |                 |      |          |          |          |      |     |      |  |
| Total Recoverable Hydrocarbons - | 2013 NEPM Fract | ions |          | Result 1 | Result 2 | RPD  |     |      |  |
| Naphthalene                      | S18-No14969     | CP   | mg/kg    | < 0.5    | < 0.5    | <1   | 30% | Pass |  |
| TRH C6-C10                       | S18-No14969     | CP   | mg/kg    | < 20     | < 20     | <1   | 30% | Pass |  |
| Duplicate                        |                 |      |          |          | 1        |      |     | 1    |  |
| Heavy Metals                     |                 |      |          | Result 1 | Result 2 | RPD  |     |      |  |
| Arsenic                          | S18-No14970     | CP   | mg/kg    | < 2      | < 2      | <1   | 30% | Pass |  |
| Cadmium                          | S18-No14970     | CP   | mg/kg    | < 0.4    | < 0.4    | <1   | 30% | Pass |  |
| Chromium                         | S18-No14970     | CP   | mg/kg    | 13       | 13       | 1.0  | 30% | Pass |  |
| Copper                           | S18-No14970     | CP   | mg/kg    | 16       | 16       | 1.0  | 30% | Pass |  |
| Iron                             | S18-No14970     | CP   | mg/kg    | 6700     | 6700     | 1.0  | 30% | Pass |  |
| Lead                             | S18-No14970     | CP   | mg/kg    | 11       | 11       | 1.0  | 30% | Pass |  |
| Mercury                          | S18-No14970     | CP   | mg/kg    | < 0.1    | < 0.1    | <1   | 30% | Pass |  |
| Nickel                           | S18-No14970     | CP   | mg/kg    | 17       | 17       | 1.0  | 30% | Pass |  |
| Zinc                             | S18-No14970     | CP   | mg/kg    | 26       | 26       | 1.0  | 30% | Pass |  |
| Duplicate                        |                 |      |          |          |          |      |     |      |  |
| Acid Sulfate Soils Field pH Test |                 |      |          | Result 1 | Result 2 | RPD  |     |      |  |
| pH-F (Field pH test)*            | S18-No14983     | CP   | pH Units | 6.4      | 6.3      | pass | 30% | Pass |  |
| Reaction Ratings*                | S18-No14983     | CP   | comment  | 1.0      | 1.0      | pass | 30% | Pass |  |
| Duplicate                        |                 |      |          |          | ,        |      |     |      |  |
| Acid Sulfate Soils Field pH Test |                 |      |          | Result 1 | Result 2 | RPD  |     |      |  |
| pH-F (Field pH test)*            | S18-No14993     | CP   | pH Units | 8.2      | 8.3      | pass | 30% | Pass |  |
| Reaction Ratings*                | S18-No14993     | CP   | comment  | 1.0      | 1.0      | pass | 30% | Pass |  |



#### Comments

Eurofins | mgt accreditation number 1261, corporate site 1254 is currently in progress of a controlled transition to a new custom built location at 6 Monterey Road, Dandenong South, Victoria 3175. All results on this report denoted as being performed by Eurofins | mgt 2-5 Kingston Town Close, Oakleigh Victoria 3166 corporate site 1254, will have been performed on either Oakleigh or new Dandenong South site.

| Sample Integrity  |     |
|---|-----|
| Custody Seals Intact (if used)  | N/A |
| Attempt to Chill was evident  | Yes |
| Sample correctly preserved  | Yes |
| Appropriate sample containers have been used                            | Yes |
| Sample containers for volatile analysis received with minimal headspace | Yes |
| Samples received within HoldingTime                                     | Yes |
| Some samples have been subcontracted                                    | No  |

#### **Qualifier Codes/Comments**

Code Description

 F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).

 Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.

F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

N07 Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Q15 The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Field Screen uses the following fizz rating to classify the rate the samples reacted to the peroxide: 1.0; No reaction to slight. 2.0; Moderate reaction. 3.0; Strong reaction with persistent froth. 4.0; Extreme reaction.

#### Authorised By

| Nibha Vaidya    | Analytical Services Manager    |
|-----------------|--------------------------------|
| Chris Bennett   | Senior Analyst-Metal (VIC)     |
| Harry Bacalis   | Senior Analyst-Volatile (VIC)  |
| Jonathon Angell | Senior Analyst-Inorganic (QLD) |
| Joseph Edouard  | Senior Analyst-Organic (VIC)   |
| Julie Kay       | Senior Analyst-Inorganic (VIC) |
| Myles Clark     | Senior Analyst-SPOCAS (QLD)    |
| Nibha Vaidya    | Senior Analyst-Asbestos (NSW)  |

li jak

Glenn Jackson General Manager Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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# Certificate of Analysis



NATA Accredited Accreditation Number 1261 Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Cardno (NSW/ACT) Pty Ltd Level 9, 203 Pacific Highway St Leonards NSW 2065

| Attention:                                       | Ben Withnall  |
|--|---|
| Report   | 627289-AID  |
| Project Name                                     | KYEEMAGH INFANTS SCHOOL   |
| Project ID                                       | 80818157  |
| Received Date                                    | Nov 12, 2018  |
| Date Reported                                    | Nov 21, 2018  |
| Methodology:                                     |   |
| Asbestos Fibre<br>Identification                 | Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques.<br>NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.  |
| Unknown Mineral<br>Fibres                        | Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as<br>Electron Microscopy, to confirm unequivocal identity.<br>NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the<br>optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an<br>independent technique.  |
| Subsampling Soil<br>Samples                      | The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed.<br><i>NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.</i>  |
| Bonded asbestos-<br>containing material<br>(ACM) | The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination. The resultant material is then further examined in accordance with AS 4964 - 2004. NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.   |
| Limit of Reporting                               | The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk). NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos". This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH. |





Accredited for compliance with ISO/IEC 17025–Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

| Project Name | KYEEMAGH INFANTS SCHOOL |
|--------------|-------------------------|
| Project ID   | 80818157                |
| Date Sampled | Nov 10, 2018            |
| Report       | 627289-AID              |

| Client Sample ID | Eurofins   mgt<br>Sample No. | Date Sampled | Sample Description   | Result   |
|------------------|------------------------------|--------------|--|--|
| TP03_0.2         | 18-No14957                   | Nov 10, 2018 | Approximate Sample 678g<br>Sample consisted of: Brown fine-grained sandy soil                      | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected. |
|                  |                              |              |  | No respirable fibres detected.   |
| TP03_1.2         | 18-No14958                   | Nov 10, 2018 | Approximate Sample 709g<br>Sample consisted of: Brown fine-grained sandy soil and rocks            | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected. |
|                  |                              |              | Cample consisted of Drown nine granica sarray soil and rocks                                       | No respirable fibres detected.   |
| TP03_ASB1        | 18-No14959                   | Nov 10, 2018 | Approximate Sample 116g / 100x70x5mm<br>Sample consisted of: Grey compressed fibre cement material | Chrysotile asbestos detected.  |
| TP19_0.1         | 18-No14960                   | Nov 10, 2018 | Approximate Sample 575g<br>Sample consisted of: Brown fine-grained sandy soil and organic debris   | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected. |
|                  |                              |              |  | No respirable fibres detected.   |
| TP19_0.3         | 18-No14961                   | Nov 10, 2018 | Approximate Sample 355g<br>Sample consisted of: Brown fine-grained sandy soil, rocks and organic   | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected. |
|                  |                              |              |  | No respirable fibres detected.   |
| TP01_0.2         | 18-No14962                   | Nov 10, 2018 | Approximate Sample 363g<br>Sample consisted of: Dark brown coarse-grained soil and rocks           | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected. |
|                  |                              |              | Cample consisted of Dark brown coarse grained soil and rooks                                       | No respirable fibres detected.   |
| TP02_0.1         | 18-No14964                   | Nov 10, 2018 | Approximate Sample 693g<br>Sample consisted of: Brown fine-grained sandy soil, rocks and organic   | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected. |
|                  |                              |              | debris   | No respirable fibres detected.   |
| TP02_0.4         | 18-No14965                   | Nov 10, 2018 | Approximate Sample 753g<br>Sample consisted of: Brown fine-grained sandy soil and rocks            | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected. |
|                  |                              |              |  | No respirable fibres detected.   |





NATA Accredited Accreditation Number 1261 Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

| Client Sample ID | Eurofins   mgt<br>Sample No. | Date Sampled | Sample Description  | Result   |
|------------------|------------------------------|--------------|---|--|
| TP04_0.1         | 18-No14966                   | Nov 10, 2018 | Approximate Sample 729g<br>Sample consisted of: Brown fine-grained sandy soil and rocks   | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected. |
|                  |                              |              |   | No respirable fibres detected.   |
| TP05_0.1         | 18-No14967                   | Nov 10, 2018 | Approximate Sample 674g<br>Sample consisted of: Brown fine-grained sandy soil and rocks   | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected. |
|                  |                              |              | bampie consisted of Brown the granted carry soil and rooks                                | No respirable fibres detected.   |
| TP06_0.1         | 18-No14969                   | Nov 10, 2018 | Approximate Sample 893g   | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected. |
|                  |                              |              | bampie consisted of brown coarse granted soil and rocks                                   | No respirable fibres detected.   |
| TP07_0.1         | 18-No14971                   | Nov 10, 2018 | Approximate Sample 556g   | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected. |
|                  |                              |              | Sample consisted of brown me-grained sandy soil and rocks                                 | No respirable fibres detected.   |
| TP09_0.3         | 18-No14975                   | Nov 10, 2018 | Approximate Sample 717g<br>Sample consisted of: Brown fine-grained sandy soil and organic | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected. |
|                  |                              |              | debris  | No respirable fibres detected.   |
| TP11_0.2         | 18-No14977                   | Nov 10, 2018 | Approximate Sample 798g<br>Sample consisted of: Brown fine-grained sandy soil and organic | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected. |
|                  |                              |              | dedris  | No respirable fibres detected.   |
| TP12_0.2         | 18-No14979                   | Nov 10, 2018 | Approximate Sample 629g<br>Sample consisted of: Brown fine-grained sandy soil and organic | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected. |
|                  |                              |              |   | No respirable fibres detected.   |



## **Sample History**

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

| Description             | Testing Site | Extracted    | Holding Time |
|-------------------------|--------------|--------------|--------------|
| Asbestos - LTM-ASB-8020 | Sydney       | Nov 12, 2018 | Indefinite   |
| Asbestos - LTM-ASB-8020 | Sydney       | Nov 12, 2018 | Indefinite   |





| Melbourne               |
|-------------------------|
| 3-5 Kingston Town Close |
| Oakleigh VIC 3166       |

NATA # 1261 Site # 1254 & 14271

Phone : +61 3 8564 5000

Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217 Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794 Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 NATA # 1261 Site # 23736

| Co<br>Ad | ompany Name: Cardno (NSW/ACT) Pty Ltd<br>ddress: Level 9, 203 Pacific Highway<br>St Leonards<br>NSW 2065 |                        |            |             |                          | Or<br>Re<br>Ph<br>Fa       | der N<br>port a<br>one:<br>x: | lo.:<br>#:                       | 62<br>02<br>02           | 27289<br>29496<br>2 949 | )<br>67700<br>9 390:                | 2                       |                         | Received:Nov 12, 2018 4:31 PMDue:Nov 19, 2018Priority:5 DayContact Name:Ben Withnall |
|----------|--|------------------------|------------|-------------|--------------------------|----------------------------|-------------------------------|----------------------------------|--------------------------|-------------------------|-------------------------------------|-------------------------|-------------------------|--|
| Pro      | oject Name:  | KYEEMAGH INFAN         | ITS SCHOOL |             |                          |                            |                               |                                  |                          |                         |                                     |                         |                         |  |
| Pro      | oject ID:  | 80818157               |            |             |                          |                            |                               |                                  |                          |                         |                                     |                         |                         | Eurofins   mgt Analytical Services Manager : Nibha Vaidya                            |
|          |  | Sample D               | etail      |             | Asbestos - WA guidelines | Asbestos Absence /Presence | HOLD                          | Acid Sulfate Soils Field pH Test | Eurofins   mgt Suite B15 | Moisture Set            | NEPM Screen for Soil Classification | Eurofins   mgt Suite B7 | Eurofins   mgt Suite B8 |  |
| Melb     | ourne Laborato   | ory - NATA Site # 1254 | & 14271    |             |                          |                            | Х                             |                                  | х                        | Х                       | Х                                   | х                       | х                       |  |
| Sydr     | ney Laboratory   | - NATA Site # 18217    |            |             | Х                        | Х                          |                               |                                  |                          |                         |                                     |                         |                         |  |
| Bris     | bane Laborator   | y - NATA Site # 20794  |            |             |                          |                            |                               | Х                                |                          |                         | Х                                   |                         |                         |  |
| Pert     | h Laboratory - N   | NATA Site # 23736      |            |             |                          |                            |                               |                                  |                          |                         |                                     |                         |                         |  |
| 10       | TP04_0.1   | Nov 10, 2018           | Soil       | S18-No14966 | Х                        |                            |                               |                                  | Х                        | Х                       |                                     | Х                       |                         |  |
| 11       | TP05_0.1   | Nov 10, 2018           | Soil       | S18-No14967 | Х                        |                            |                               |                                  |                          | Х                       |                                     | Х                       |                         |  |
| 12       | TP05_0.9   | Nov 10, 2018           | Soil       | S18-No14968 |                          |                            |                               |                                  |                          | Х                       | Х                                   |                         | Х                       |  |
| 13       | TP06_0.1   | Nov 10, 2018           | Soil       | S18-No14969 | Х                        |                            |                               |                                  |                          | Х                       |                                     | Х                       |                         |  |
| 14       | TP06_0.3   | Nov 10, 2018           | Soil       | S18-No14970 |                          |                            |                               |                                  |                          | Х                       |                                     |                         | Х                       |  |
| 15       | TP07_0.1   | Nov 10, 2018           | Soil       | S18-No14971 | Х                        |                            |                               |                                  |                          | Х                       |                                     | Х                       |                         |  |
| 16       | TP07_0.4   | Nov 10, 2018           | Soil       | S18-No14972 |                          |                            |                               |                                  |                          | Х                       | Х                                   | X                       |                         |  |
| 17       | TP07_0.6   | Nov 10, 2018           | Soil       | S18-No14973 |                          |                            |                               |                                  |                          | Х                       |                                     | X                       |                         |  |
| 18       | TP08_0.4   | Nov 10, 2018           | Soil       | S18-No14974 |                          |                            |                               |                                  |                          | Х                       |                                     |                         | Х                       |  |
| 19       | TP09_0.3   | Nov 10, 2018           | Soil       | S18-No14975 | Х                        |                            |                               |                                  |                          | Х                       |                                     | Х                       |                         |  |
| 20       | TP10_0.1   | Nov 10, 2018           | Soil       | S18-No14976 |                          |                            |                               |                                  |                          | Х                       |                                     | Х                       |                         |  |
| 21       | TP11_0.2   | Nov 10, 2018           | Soil       | S18-No14977 | Х                        |                            |                               |                                  | Х                        | Х                       |                                     | Х                       |                         |  |

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| Melbourne               |
|-------------------------|
| 3-5 Kingston Town Close |
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NATA # 1261

Site # 1254 & 14271

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 1/21 Smallwood Place
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 Murarie QLD 4172
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 Phone : +61 7 3902 4600
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 NATA # 1261 Site # 20794
 N

Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 NATA # 1261 Site # 23736

| Company Name:<br>Address: | Company Name:Cardno (NSW/ACT) Pty LtdAddress:Level 9, 203 Pacific HighwaySt LeonardsNSW 2065 |      |             |   | Or<br>Re<br>Ph<br>Fa       | der N<br>port i<br>one:<br>x: | o.:<br>#:                        | 62<br>02<br>02           | 27289<br>29496<br>2 949 | )<br>67700<br>9 390                 | 2                       |                         | Received:Nov 12, 2018Due:Nov 19, 2018Priority:5 DayContact Name:Ben Withnall | 4:31 PM          |
|---------------------------|--|------|-------------|---|----------------------------|-------------------------------|----------------------------------|--------------------------|-------------------------|-------------------------------------|-------------------------|-------------------------|--|------------------|
| Project Name:             | KYEEMAGH INFANTS SC  | HOOL |             |   |                            |                               |                                  |                          |                         |                                     |                         |                         |  |                  |
| Project ID:               | 80818157   |      |             |   |                            |                               |                                  |                          |                         |                                     |                         |                         | Eurofins   mgt Analytical Services Manager                                   | r : Nibha Vaidya |
| Sample Detail             |  |      |             |   | Asbestos Absence /Presence | HOLD                          | Acid Sulfate Soils Field pH Test | Eurofins   mgt Suite B15 | Moisture Set            | NEPM Screen for Soil Classification | Eurofins   mgt Suite B7 | Eurofins   mgt Suite B8 |  |                  |
| Melbourne Laborato        | ory - NATA Site # 1254 & 142   | .71  |             |   |                            | х                             |                                  | х                        | Х                       | х                                   | х                       | х                       |  |                  |
| Sydney Laboratory -       | - NATA Site # 18217  |      |             | Х | Х                          |                               |                                  |                          |                         |                                     |                         |                         |  |                  |
| Brisbane Laboratory       | y - NATA Site # 20794  |      |             |   |                            |                               | х                                |                          |                         | х                                   |                         |                         |  |                  |
| Perth Laboratory - N      | ATA Site # 23736   | -    |             |   |                            |                               |                                  |                          |                         |                                     |                         |                         |  |                  |
| 22 TP11_1.2               | Nov 10, 2018   | Soil | S18-No14978 |   |                            |                               |                                  |                          | Х                       |                                     |                         | Х                       |  |                  |
| 23 TP12_0.2               | Nov 10, 2018   | Soil | S18-No14979 | Х |                            |                               |                                  | х                        | Х                       | Х                                   | Х                       |                         |  |                  |
| 24 QA100                  | Nov 10, 2018   | Soil | S18-No14980 |   |                            |                               |                                  | Х                        | Х                       |                                     |                         | Х                       |  |                  |
| 25 BH4_0.4                | Nov 10, 2018   | Soil | S18-No14981 |   |                            |                               |                                  |                          | Х                       |                                     | Х                       |                         |  |                  |
| 26 BH05_0.2-0.5           | Nov 10, 2018   | Soil | S18-No14982 |   |                            |                               |                                  |                          | Х                       |                                     |                         | Х                       |  |                  |
| 27 BH01_1.0-1.45          | Nov 10, 2018   | Soil | S18-No14983 |   |                            |                               | Х                                |                          |                         |                                     |                         |                         |  |                  |
| 28 BH01_2.5-2.95          | Nov 10, 2018   | Soil | S18-No14984 |   |                            |                               | Х                                |                          |                         |                                     |                         |                         |  |                  |
| 29 BH01_3.0-3.45          | Nov 10, 2018   | Soil | S18-No14985 |   |                            |                               | Х                                |                          |                         |                                     |                         |                         |  |                  |
| 30 BH01_4.0-4.45          | Nov 10, 2018   | Soil | S18-No14986 |   |                            |                               | Х                                |                          |                         |                                     |                         |                         |  |                  |
| 31 BH01_5.0-5.95          | Nov 10, 2018   | Soil | S18-No14987 |   |                            |                               | Х                                |                          |                         |                                     |                         |                         |  |                  |
| 32 BH01_7.0-7.45          | Nov 10, 2018   | Soil | S18-No14988 |   |                            |                               | Х                                |                          |                         |                                     |                         |                         |  |                  |
| 33 BH01_8.0-8.95          | Nov 10, 2018   | Soil | S18-No14989 |   |                            |                               | Х                                |                          |                         |                                     |                         |                         |  |                  |

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TP09 0.8

TP10 0.4

TP12 1.0

**Test Counts** 

Nov 10. 2018

Nov 10. 2018

Nov 10, 2018

BH04\_0.5-0.95 Nov 10, 2018

Soil

Soil

Soil

Soil

S18-No15002

S18-No15003

S18-No15004

S18-No15005



#### Internal Quality Control Review and Glossary General

#### 1. QC data may be available on request.

- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. Samples were analysed on an 'as received' basis.
- 4. This report replaces any interim results previously issued.

#### **Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

mgt

#### Units

| % w/w: weight for weight b | pasis   | grams per kilogram  |
|----------------------------|---|---|
| Filter loading:            |   | fibres/100 graticule areas  |
| Reported Concentration:    |   | fibres/mL   |
| Flowrate:                  |   | L/min   |
| Terms                      |   |   |
| Dry                        | Sample is dried by heating prior to analysis  |   |
| LOR                        | Limit of Reporting  |   |
| COC                        | Chain of Custody  |   |
| SRA                        | Sample Receipt Advice   |   |
| ISO                        | International Standards Organisation  |   |
| AS                         | Australian Standards  |   |
| WA DOH                     | Reference document for the NEPM. Government of Western Austr<br>Sites in Western Australia (2009), including supporting document F      | alia, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated<br>Recommended Procedures for Laboratory Analysis of Asbestos in Soil (2011) |
| NEPM                       | National Environment Protection (Assessment of Site Contamination   | on) Measure, 2013 (as amended)  |
| ACM                        | Asbestos Containing Materials. Asbestos contained within a non-a:<br>NEPM, ACM is generally restricted to those materials that do not p | sbestos matrix, typically presented in bonded and/or sound condition. For the purposes of the<br>ass a 7mm x 7mm sieve.   |
| AF                         | Asbestos Fines. Asbestos containing materials, including friable, w equivalent to "non-bonded / friable".                               | eathered and bonded materials, able to pass a 7mm x 7mm sieve. Considered under the NEPM as   |
| FA                         | Fibrous Asbestos. Asbestos containing materials in a friable and/or<br>materials that do not pass a 7mm x 7mm sieve.                    | severely weathered condition. For the purposes of the NEPM, FA is generally restricted to those   |
| Friable                    | Asbestos-containing materials of any size that may be broken or cr<br>outside of the laboratory's remit to assess degree of friability. | umbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is  |
| Trace Analysis             | Analytical procedure used to detect the presence of respirable fibre  | es in the matrix.   |



#### Comments

Samples No14961 & No14962 received were less than the nominal 500mL as recommended in Section 4.10 of the NEPM Schedule B1 - Guideline on Investigation Levels for Soil and Groundwater.

Eurofins | mgt accreditation number 1261, corporate site 1254 is currently in progress of a controlled transition to a new custom built location at 6 Monterey Road, Dandenong South, Victoria 3175. All results on this report denoted as being performed by Eurofins | mgt 2-5 Kingston Town Close, Oakleigh Victoria 3166 corporate site 1254, will have been performed on either Oakleigh or new Dandenong South site.

#### Sample Integrity

| Custody Seals Intact (if used)  | N/A |
|---|-----|
| Attempt to Chill was evident  | Yes |
| Sample correctly preserved  | Yes |
| Appropriate sample containers have been used                            | Yes |
| Sample containers for volatile analysis received with minimal headspace | Yes |
| Samples received within HoldingTime                                     | Yes |
| Some samples have been subcontracted                                    | No  |

mgt

#### **Qualifier Codes/Comments**

| Code | Description    |
|------|----------------|
| N/A  | Not applicable |

#### Asbestos Counter/Identifier:

#### Authorised by:

Sayeed Abu

Senior Analyst-Asbestos (NSW)

Glenn Jackson General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

| 5                         | <b>Carcino</b><br>Shaping the Future |                    |                         |                 | CHAIN  | OF C                           | UST                | ODY /                    | AND                            | ANA            | LYSI                       | S RE  | QUES        | T           |                             |            | Pege 1 of 1                |
|---------------------------|--------------------------------------|--------------------|-------------------------|-----------------|--|--------------------------------|--------------------|--------------------------|--------------------------------|----------------|----------------------------|---|-------------|-------------|-----------------------------|------------|----------------------------|
| Contact Person:           | Ben Withnall                         |                    |                         |                 |  | Project Na                     | artie;             |                          | Kythem                         | anh infants S  | chool                      |   |             |             |                             |            |                            |
| Telephone Number:         | 9495 8188                            |                    |                         |                 |  | Project Number: 80848157       |                    |                          |                                |                |                            |   |             |             |                             |            |                            |
| Alternative Contact:      | Joel Griffiths                       |                    |                         |                 |  | PO No.:                        |                    |                          |                                |                |                            |   |             |             |                             |            |                            |
| Telephone Number:         | 9496 7673                            |                    |                         |                 |  | Project Sr                     |                    |                          |                                |                |                            |   |             |             |                             |            |                            |
| Sampler:                  | Joel Griffiths                       |                    |                         |                 |  | Date resul                     | Ht raculas         | de NO. :                 | Clande                         | ATAT           |                            |   | 181029CAR_1 |             |                             |            |                            |
| Email Address (results a  | and invoice):                        | ben.withnail@cardr | o.com.au: joel.griffith | s@cardno.com.   | au   | Report for                     | mot                | u.                       | - Charloga                     | UTAT I         |                            |   |             |             |                             |            |                            |
| Address: Level 9 - The Fi | orum, 203 Pacific Highway, St Leo    | mards. New South W | ales 2065               |                 |  | Treport Ho                     |                    |                          |                                |                | _                          | _   | Electronic  |             |                             |            |                            |
|                           |                                      | Sample Information |                         |                 |  |                                |                    |                          |                                |                | Barris att                 |   |             |             |                             |            |                            |
|                           |                                      |                    |                         | 1               |  |                                |                    | 10                       | -                              |                | Analysis                   | Required                                      |             |             |                             |            | Comments                   |
| Cardno Sample ID          | Laboratory Sample ID                 | No. Containers     | Preservation            | Date<br>sampled | Matrix   | 7*1 .<br>RH/BTEXN/PAH/Metals 8 | 15"1 - OCP/OPP/PCB | 8*1 TRH, VOC, PAH, Metal | 4 Field Screen (pH and<br>Hox) | sbestos (w/w%) | thestos Presence / Absence | ite 21*1: NEPM Screen for<br># Classification | CTO         |             |                             |            |                            |
| TP03_0.2                  |                                      | 2                  | lce                     | 10/11/201       | 8 Soil   | X                              | X                  | <u>69</u>                | 22                             | 4              | Å                          | 00  | <u> </u>    |             |                             |            |                            |
| TP03_1.2                  |                                      | 2                  | lce                     | 10/11/2010      | 8 Soil   |                                | ~                  | x                        | 1                              | X              |                            |   |             |             | _                           |            |                            |
| TP19_0.1                  |                                      | 2                  | lce                     | 10/11/2018      | Fibre Cement   |                                |                    |                          |                                |                | X                          |   |             |             |                             |            |                            |
| TP19_0.3                  |                                      | 2                  | lce                     | 10/11/201       | solf<br>Solf   | X                              |                    |                          |                                | X              |                            |   |             |             |                             |            |                            |
| TP01_0.2                  |                                      | 2                  | lce                     | 10/11/2010      | B Soil   | 1 Â                            |                    |                          |                                | X              |                            |   |             |             |                             | _          |                            |
| TP01_0.9                  |                                      | 2                  | lce                     | 10/11/2018      | 3 Soil   | X                              |                    |                          |                                | + ^            |                            |   |             |             | _                           |            |                            |
| TP02_0.4                  |                                      | 2                  | içe<br>ina              | 10/11/2018      | Soil   | X                              | Х                  |                          |                                | X              |                            |   |             | _           |                             |            |                            |
| TP04_0.1                  |                                      | 2                  | lce                     | 10/11/2018      | 3 Soll   | X                              | Y                  |                          |                                | X              | -                          |   |             |             |                             |            |                            |
| TP04_0.4                  |                                      | 2                  | lce                     | 10/11/2018      | Soil   |                                | ^                  |                          |                                | × ×            |                            |   |             |             |                             |            |                            |
| TP05_0.1                  |                                      | 2                  | lce                     | 10/11/2018      | Soil   | X                              |                    |                          |                                | x              |                            |   |             |             |                             |            |                            |
| TP06_0.1                  |                                      | 2                  | lce                     | 10/11/2018      | Soal<br>Soal   | v                              |                    | X                        |                                |                |                            | X   |             |             |                             |            |                            |
| TP06_0.3                  |                                      | 2                  | lce                     | 10/11/2018      | Soll   |                                |                    | x                        |                                | X              |                            |   |             |             |                             |            |                            |
| TP07_0.1                  |                                      | 2                  | Ice                     | 10/11/2018      | Soil   | X                              |                    | ^                        |                                | X              |                            |   |             | _           |                             |            |                            |
| TP07_0.6                  |                                      | 2                  | lce                     | 10/11/2018      | Soil   | X                              |                    |                          |                                |                |                            | X   |             |             | _                           | -          |                            |
| TP08_0.1                  |                                      | 2                  | loe                     | 10/11/2018      | Soil   | X                              |                    |                          |                                | -              |                            |   |             |             |                             |            |                            |
| TP08_0.4                  |                                      | 2                  | lce                     | 10/11/2018      | Soil   |                                |                    | x                        |                                |                |                            |   | X           |             |                             |            |                            |
| TP09_0.8                  |                                      | 2                  | lce                     | 10/11/2018      | Soll   | х                              |                    |                          |                                | X              |                            |   |             |             |                             |            |                            |
| TP10_0.1                  |                                      | 2                  | ice                     | 10/11/2018      | Soil   | ~                              |                    |                          |                                |                |                            |   | X           |             |                             |            |                            |
| TP10_0.4                  |                                      | 2                  | lce                     | 10/11/2018      | Soll   | -                              |                    |                          |                                |                | -                          |   |             |             |                             |            |                            |
| TP11_0.2                  |                                      | 2                  | lca                     | 10/11/2018      | Soil   | X                              | X                  |                          |                                | X              | -                          |   | X           |             |                             |            |                            |
| TP12_0.2                  |                                      | 2                  | lce                     | 10/11/2018      | Soil   |                                |                    | х                        |                                |                |                            |   |             |             | -                           |            |                            |
| TP12_1.0                  |                                      | 2                  | loe                     | 10/11/2018      | Soil   | X                              | ×                  |                          |                                | X              |                            | X   |             |             |                             |            |                            |
| QA100                     |                                      | 2                  | lce                     | 10/11/2018      | Soil   |                                | x                  | x                        |                                |                |                            |   | X           |             | _                           |            |                            |
| BH4 0.4                   |                                      | 2                  | lóe                     | 10/11/2018      | Soll   |                                |                    |                          |                                |                |                            |   |             |             |                             |            | Plance Francisk ALC        |
| BH05_0.2-0.5              |                                      | 1                  | lce                     | 10/11/2018      | Soil   | X                              |                    |                          | _                              |                |                            |   |             |             | -                           |            | Please Forward to ALS      |
| BH01_1.0-1.45             |                                      | 1                  | Frozen                  | 10/11/2018      | Soll   |                                |                    | X                        | v                              |                |                            |   |             |             |                             |            |                            |
| BH01_2.5-2.95             |                                      | 1                  | Frozen                  | 10/11/2018      | Soil   |                                |                    |                          | X                              |                |                            |   |             |             |                             |            |                            |
| BH05_3.0-3.45             |                                      | 1                  | Frozen                  | 10/11/2018      | Soil   |                                |                    |                          | X                              |                |                            |   |             |             |                             |            |                            |
| BH01_4.0-4.45             |                                      | 1                  | Frozen                  | 10/11/2018      | Soil   |                                |                    |                          | X                              |                |                            |   |             |             |                             |            |                            |
| BH01_5.5-5.95             |                                      | 1                  | Frozen                  | 10/11/2018      | Soil   |                                |                    |                          | X                              |                |                            |   |             |             |                             |            |                            |
| BH01_7.0-7.45             |                                      | 1                  | Frozen                  | 10/11/2018      | Soil   |                                |                    |                          | X                              |                |                            |   |             |             |                             |            |                            |
| BH01_8.5-8.95             |                                      | 1                  | Frozen                  | 10/11/2018      | Soil   |                                |                    |                          | ×                              | + - +          |                            |   |             | _           |                             |            |                            |
| BH01_10.0-10.45           |                                      | 1                  | Frozen                  | 10/11/2019      | Soll   |                                |                    |                          | X                              | +              |                            |   |             |             | -                           |            |                            |
| 8H01_11.0-11.45           |                                      | 1                  | Frozen                  | 10/11/2010      | Soli line  |                                |                    |                          | X                              |                |                            |   |             |             |                             |            |                            |
| BH01_13.0-13.45           |                                      | 1                  | Frozen                  | 10/11/2018      | Soll   |                                |                    |                          | X                              |                |                            |   |             |             |                             |            |                            |
| BH01_14.5-14.95           |                                      | t                  | Frozen                  | 10/11/2018      | Soil   |                                |                    |                          | ×                              | ++             |                            |   |             |             |                             |            |                            |
| BH01_16.0-16.45           |                                      | 1                  | Frozen                  | 10/11/2018      | Soil   |                                |                    |                          | ~                              | ++             |                            |   |             |             | _                           |            |                            |
| BH04_0.5-0.95             |                                      | 1                  | Frozen                  | 10/11/2018      | Soil   |                                |                    |                          | v                              |                |                            |   |             |             | _                           |            |                            |
| BH04_2.0-2.45             |                                      | 1                  | Frozen                  | 10/11/2018      | Soil   |                                |                    |                          | × ×                            | +              |                            |   |             |             |                             |            |                            |
| BH04_3.0-3.45             |                                      | 1                  | Frozen                  | 10/11/2018      | Soil   | -                              |                    |                          | ×<br>Y                         | <u>├</u>       |                            |   |             |             | _                           |            |                            |
| BH05_1.5-1.95             |                                      | 1                  | Frozen                  | 10/11/2018      | Soil   |                                |                    |                          | Ŷ                              | <u>├</u>       |                            |   |             |             |                             |            |                            |
| BH05_4.5-4.95             |                                      | 1                  | Frozen                  | 10/11/2018      | Soil   |                                |                    |                          | X                              |                |                            |   |             |             | _                           |            |                            |
|                           |                                      |                    |                         |                 |  |                                |                    |                          | ~                              |                |                            |   |             |             |                             |            | **                         |
|                           |                                      |                    |                         |                 |  |                                |                    |                          |                                |                |                            |   |             | _           |                             |            |                            |
|                           |                                      |                    |                         |                 |  |                                |                    |                          |                                |                |                            |   |             |             |                             |            |                            |
|                           |                                      |                    |                         |                 |  |                                |                    |                          |                                |                | -                          |   |             |             |                             |            |                            |
| Inquished by:             | Joel Griffiths                       | Received by: 1.1   | HaD.                    |                 | Relinguished her   |                                |                    |                          |                                |                |                            |   |             |             |                             |            |                            |
| ame / company)            | Cardino                              | name / company F   | 11 votine               | (I)T            | and the second s |                                |                    |                          |                                | Received by    | •                          |   |             |             | Relinquis                   | hed by:    |                            |
| te & Time:                | 12/11/18: 12:00                      |                    | 11/10 1.11              | 1 DAA           | (name / company  |                                | _                  | _                        |                                | (name / com    | ралу)                      |   |             | _           | (name / co                  | mpany)     |                            |
|                           | 12111/10, 12.00                      | ANCE & TIME: 12/1  | 1110 413                | M 1711          | Date & Time:   |                                | -                  |                          |                                | Date & Time    | :                          |   |             |             | Date & Tir                  | ne;        |                            |
| mature:                   | 10 5                                 | Signature: All     | Bullin                  |                 | Signature:   |                                |                    |                          |                                | Signature:     |                            |   |             |             | Singalue                    |            |                            |
| ceived by:                | F                                    | lefinguished by:   |                         |                 | Received by:   |                                |                    |                          |                                | Relinsuiste    | t have                     |   |             |             | GAGAADURG:                  |            |                            |
| ame / company)            |                                      | name / company)    |                         |                 |  |                                |                    |                          |                                |                | a naget                    |   |             |             | Lab use:                    |            |                            |
| nte & Time:               |                                      |                    | Date 0.2                |                 |  |                                |                    | (name / com              | p-any)                         |                |                            |   | Samples F   | decelved (C | ool pr Ambient (circle one) |            |                            |
| grature:                  |                                      | in patures         |                         |                 |  |                                |                    |                          |                                | Date & Time:   |                            |   |             |             | Temperate                   | re Receive | d at: 4, S'C (Wapplicable) |
|                           | 5                                    | an undere:         |                         |                 | Signature:   |                                |                    |                          |                                | di la stanta   |                            |   |             |             |                             |            |                            |

#627289



Melbourne 3-5 Kingston Town Close Oakleigh Vic 3166 Phone : +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271

Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217

Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794

web : www.eurofins.com.au

Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 NATA # 1261 Site # 23736

ABN - 50 005 085 521

e.mail : EnviroSales@eurofins.com

Sample Receipt Advice

Cardno (NSW/ACT) Pty Ltd Company name: Contact name: **Ben Withnall KYEEMAGH INFANTS SCHOOL** Project name: Project ID: 80818157 COC number: Not provided Turn around time: 5 Day Nov 12, 2018 4:31 PM Date/Time received: Eurofins | mgt reference: 627289

## Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Split sample sent to requested external lab.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

## Notes

Sample QA200 forwarded to ALS. Extra Jar received (BH04\_0.5-0.95) placed on hold.

## **Contact notes**

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Ben Withnall - ben.withnall@cardno.com.au.

Note: A copy of these results will also be delivered to the general Cardno (NSW/ACT) Pty Ltd email address.



Environmental Laboratory Air Analysis Water Analysis Soil Contamination Analysis

NATA Accreditation Stack Emission Sampling & Analysis Trade Waste Sampling & Analysis Groundwater Sampling & Analysis



38 Years of Environmental Analysis & Experience



# Certificate of Analysis

Cardno (NSW/ACT) Pty Ltd Level 9, 203 Pacific Highway St Leonards NSW 2065



NATA Accredited Accreditation Number 1261 Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

| Attention:                                       | Ben Withnall  |
|--|---|
| Report   | 629407-AID  |
| Project Name                                     | ADDITIONAL - KYEEMAGH INFANTS SCHOOL  |
| Project ID                                       | 80818157  |
| Received Date                                    | Nov 22, 2018  |
| Date Reported                                    | Nov 29, 2018  |
| Methodology:                                     |   |
| Asbestos Fibre<br>Identification                 | Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques.<br>NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.  |
| Unknown Mineral<br>Fibres                        | Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as<br>Electron Microscopy, to confirm unequivocal identity.<br>NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the<br>optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an<br>independent technique.  |
| Subsampling Soil<br>Samples                      | The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-<br>sampling routine based on ISO 3082:2009(E) is employed.<br>NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-<br>sampled for trace analysis, in accordance with AS 4964-2004.   |
| Bonded asbestos-<br>containing material<br>(ACM) | The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination. The resultant material is then further examined in accordance with AS 4964 - 2004. NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.   |
| Limit of Reporting                               | The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk). NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos". This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DOH. |





Accredited for compliance with ISO/IEC 17025–Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Project NameADDITIONAL - KYEEMAGH INFANTS SCHOOLProject ID80818157Date SampledNov 10, 2018Report629407-AID

| Client Sample ID | Eurofins   mgt<br>Sample No. | Date Sampled | Sample Description  | Result   |
|------------------|------------------------------|--------------|---|--|
| TP04_0.4         | 18-No31520                   | Nov 10, 2018 | Approximate Sample 816<br>Sample consisted of: Gray coarse-grained sandy soil | ACM:<br>Chrysotile asbestos detected in fibre cement fragments.<br>Approximate raw weight of ACM = 16g<br>Total estimated asbestos content in ACM = 1.6g*<br>Total estimated asbestos concentration in ACM = 0.19% w/w*<br>Organic fibre detected.<br>No respirable fibres detected. |



## **Sample History**

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description Asbestos - LTM-ASB-8020 Testing SiteExtractedHolding TimeSydneyNov 23, 2018Indefinite

| 🔅 euro  | ofins        | mgt              |        |             | ABN – 5<br>e.mail :<br>web : w | 0 005 085 521<br>EnviroSales@eurofins.com<br>ww.eurofins.com.au | Melbourne<br>3-5 Kingston Town Close<br>Oakleigh VIC 3166<br>Phone : +61 3 8564 5000<br>NATA # 1261<br>Site # 1254 & 14271 | <b>Sydney</b><br>Unit F3, Building F<br>16 Mars Road<br>Lane Cove West NSW 2066<br>Phone : +61 2 9900 8400<br>NATA # 1261 Site # 18217 | Brisbane<br>1/21 Smallwood Place<br>Murarrie QLD 4172<br>Phone : +61 7 3902 4600<br>NATA # 1261 Site # 20794 | Perth<br>2/91 Leach Highway<br>Kewdale WA 6105<br>Phone : +61 8 9251 9600<br>NATA # 1261<br>Site # 23736 |
|---|--------------|------------------|--------|-------------|--------------------------------|---|--|--|--|--|
| Company Name:       Cardno (NSW/ACT) Pty Ltd         Address:       Level 9, 203 Pacific Highway         St Leonards       NSW 2065 |              |                  |        |             |                                | Order No.:<br>Report #: 6.<br>Phone: 0.<br>Fax: 0.              | 29407<br>294967700<br>2 9499 3902  | Receive<br>Due:<br>Priority:<br>Contact  | d: Nov 22,<br>Nov 29,<br>5 Day<br>Name: Ben With   | 2018 12:04 PM<br>2018<br>nall  |
| Project Name:ADDITIONAL - KYEEMAGH INFANTS SCHOOLProject ID:80818157  |              |                  |        |             |                                |   |  | Eurofins   mgt A   | nalytical Services Ma  | nager : Nibha Vaidya   |
|   | Sa           | mple Detail      |        |             | stos - WA guidelines           |   |  |  |  |  |
| Melbourne Laboratory - NATA Site # 1254 & 14271   |              |                  |        |             |                                |   |  |  |  |  |
| Sydney Laboratory - NATA Site # 18217   |              |                  |        |             | X                              |   |  |  |  |  |
| Brisbane Laboratory - NATA Site # 20794   |              |                  |        |             |                                |   |  |  |  |  |
| Ferni Laboratory - NATA Site # 23736  |              |                  |        |             |                                |   |  |  |  |  |
| No Sample ID  | Sample Date  | Sampling<br>Time | Matrix | LAB ID      |                                |   |  |  |  |  |
| 1 TP04_0.4  | Nov 10, 2018 |                  | Soil   | S18-No31520 | Х                              |   |  |  |  |  |
| Test Counts   |              |                  |        |             | 1                              |   |  |  |  |  |


#### Internal Quality Control Review and Glossary General

#### 1. QC data may be available on request.

- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. Samples were analysed on an 'as received' basis.
- 4. This report replaces any interim results previously issued.

#### **Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

mgt

#### Units

| Filter loading: fibres/100 graticule areas   Reported Concentration: fibres/mL   Flowrate: L/min   Terms J   Dry Sample is dried by heating prior to analysis   LOR Limit of Reporting   |
|--|
| Reported Concentration: fibres/mL   Flowrate: L/min   Terms Jmin   Dry Sample is dried by heating prior to analysis   LOR Limit of Reporting   |
| Flowrate: L/min   Terms   Dry Sample is dried by heating prior to analysis   LOR Limit of Reporting  |
| Terms   Dry Sample is dried by heating prior to analysis   LOR Limit of Reporting  |
| Dry Sample is dried by heating prior to analysis   LOR Limit of Reporting  |
| LOR Limit of Reporting   |
|  |
| COC Chain of Custody   |
| SRA Sample Receipt Advice  |
| ISO International Standards Organisation   |
| AS Australian Standards  |
| WA DOH     Reference document for the NEPM. Government of Western Australia, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated       Sites in Western Australia (2009), including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil (2011) |
| NEPM National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended)   |
| ACM Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded and/or sound condition. For the purposes of the NEPM, ACM is generally restricted to those materials that do not pass a 7mm x 7mm sieve.   |
| AF Asbestos Fines. Asbestos containing materials, including friable, weathered and bonded materials, able to pass a 7mm x 7mm sieve. Considered under the NEPM as equivalent to "non-bonded / friable".  |
| FA Fibrous Asbestos. Asbestos containing materials in a friable and/or severely weathered condition. For the purposes of the NEPM, FA is generally restricted to those materials that do not pass a 7mm x 7mm sieve.   |
| Friable Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory's remit to assess degree of friability.   |
| Trace Analysis     Analytical procedure used to detect the presence of respirable fibres in the matrix.  |



# mgt

#### Comments

Eurofins | mgt accreditation number 1261, corporate site 1254 is currently in progress of a controlled transition to a new custom built location at 6 Monterey Road, Dandenong South, Victoria 3175. All results on this report denoted as being performed by Eurofins | mgt 2-5 Kingston Town Close, Oakleigh Victoria 3166 corporate site 1254, will have been performed on either Oakleigh or new Dandenong South site.

| Sample Integrity  |     |
|---|-----|
| Custody Seals Intact (if used)  | N/A |
| Attempt to Chill was evident  | Yes |
| Sample correctly preserved  | Yes |
| Appropriate sample containers have been used                            | Yes |
| Sample containers for volatile analysis received with minimal headspace | Yes |
| Samples received within HoldingTime                                     | Yes |
| Some samples have been subcontracted                                    | No  |

#### **Qualifier Codes/Comments**

CodeDescriptionN/ANot applicable

#### Asbestos Counter/Identifier:

### Authorised by:

Sayeed Abu

Senior Analyst-Asbestos (NSW)

Glenn Jackson General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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| -   |                 |                   | )                    | ł                 | -                 |                           |                                   | -                  |   |            |   |                  |                  |                 |            |                  |                            |                      |                      |
|---|-----------------|-------------------|----------------------|-------------------|-------------------|---------------------------|-----------------------------------|--------------------|---|------------|---|------------------|------------------|-----------------|------------|------------------|----------------------------|----------------------|----------------------|
| - L   |                 |                   | 0 00 19              |                   |                   |                           | ,                                 | Comments           |   |            |   |                  |                  |                 |            |                  | ol or Ambient (circle one) | at: (if anolicable)  | delivered / courter  |
|   |                 |                   |                      |                   |                   |                           |                                   |                    |   |            |   | Relinquished by: | (name / company) | Date & Time:    | Signature: | Lab use:         | Samples Received: Co       | Temperature Received | Transported by: Hand |
| UEST  |                 |                   |                      | 29CAR_1           | I                 | stronic                   |                                   |                    |   |            |   |                  |                  |                 |            |                  |                            |                      |                      |
| S REQ   |                 |                   |                      | 18102             |                   | Elec                      |                                   | Required           | Suite 21*1: NEPM Screen for             | m m        |   |                  |                  |                 |            |                  |                            |                      |                      |
| VALYSI  | ants School     |                   |                      |                   |                   |                           |                                   | Analysis           | Asbestos (w/w%)                         | /<br>/×    | _ | elved by:        | Te / company)    | e & Time:       | valure:    | nquished by:     | ne / company)              | s & Time:            | valure:              |
|   | Kyeemagh Inte   | 80818167          |                      |                   | Standard TAT      |                           |                                   |                    | hine Hq) heend Soreen (pH and<br>(xo)Hq | 1          |   | Rec              | (nar             | Dat             | 10.55      | Reif             | (Indir                     | Date                 | Slar                 |
| TODY  |                 |                   |                      | huote No. :       | red:              |                           |                                   |                    | 86*1 TRH, VOC, PAH, Metals<br>(8)       |            |   |                  |                  |                 |            |                  |                            |                      |                      |
|   | rojact Name:    | roject Number:    | O No.:               | roject Specific G | ate results requi | eport format:             |                                   |                    | 87*1 -<br>B7*1 - OCP/OPP/PCB            |            |   |                  |                  |                 |            |                  |                            |                      |                      |
| CHAIN O   | ā               | ā                 | đ                    | Ē                 | ă                 | R                         |                                   |                    | Matrix                                  | Sol        |   | tetinquished by: | name / company   | late & Time:    | Signature: | teceived by:     | name / company             | )ste & Time:         | ilanature:           |
|   |                 |                   |                      |                   |                   | cardno.com.eu             |                                   |                    | Date<br>sampled                         | 10/11/2018 |   | 0                | all a            | U4PM            | 1          | Ľ                | -                          | 0                    | 07                   |
|   |                 |                   |                      |                   |                   | com.au joel, niffiths     | iles 2065                         |                    | Preservation                            | 8          |   | 11/ 21/          | AL KIN           | A/1/ 12         |            |                  |                            |                      |                      |
|   |                 |                   |                      |                   |                   | ben.withnall@cardno       | nards, New South Wa               | Sample information | No. Containers                          | 2          |   | Received by:     | (name / company) | Data & Timo: 🗸  | Signature: | Refinquished by: | (name / company)           | Date & Tine:         | Signature:           |
| <b>Cardno</b> <sup>®</sup><br>Shaping the Friture | Ben Wilhmall    | 9495 8188         | Joel Griftiths       | 9496 7873         | Joel Griffiths    | id involce):              | rum, 203 Pacific Highway. St Leoi |                    | Laboratory Sample ID                    |            |   | Joel Griffiths   | Cardno           | 22/11/18: 12:00 | Ð          |                  |                            | -                    |                      |
| 5   | Contact Person: | Telephone Number: | Attermetive Contact: | Telephone Number: | Sampler:          | Email Address (results an | Address: Level 9 - The For        |                    | Cardno Sampie ID                        | TP04_0.4   |   | telinquished by: | name / company)  | Date & Time: 1  | Signature: | Received by:     | name / company)            | Date & Time;         | Signatura:           |

# **Enviro Sample NSW**

To: Subject: Nibha Vaidya; COC NSW RE: Report 627289 : Site KYEEMAGH INFANTS SCHOOL (80818157) - TP04\_0.4 ASB analysis

From: Joel Griffiths [mailto:joel.griffiths@cardno.com.au] Sent: Thursday, 22 November 2018 12:04 PM To: Nibha Vaidya Cc: Ben Withnall Subject: Report 627289 : Site KYEEMAGH INFANTS SCHOOL (80818157) - TP04\_0.4 ASB analysis

## EXTERNAL EMAIL\*

Hello Nibha,

Sorry to bug you again! Going through my notes from the other weekends field work it looks as though there was piece of FC in the ASB bag taken for TP04\_0.4. Could we please have this sample analysed? I have attached the relevant COC. Thanks a million!

Kind regards,

Joel Griffiths ENVIRONMENTAL SCIENTIST CARDNO



Phone Direct +61 2 9496 7873; Address Level 9, The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065 Australia

Email joel.griffiths@cardno.com.au Web www.cardno.com

CONNECT WITH CARDNO in 🗾 🗗 🗖

Cardno's management systems are certified to ISO9001 (quality) and AS4801/OHSAS18001 (occupational health and safety)

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mgt

Melbourne 3-5 Kingston Town Close Oakleigh Vic 3166 Phone : +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271

Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217

Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794 Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 NATA # 1261 Site # 23736

ABN - 50 005 085 521

e.mail : EnviroSales@eurofins.com

m web : www.eurofins.com.au

# Sample Receipt Advice

| Company name:             | Cardno (NSW/ACT) Pty Ltd             |
|---------------------------|--------------------------------------|
| Contact name:             | Ben Withnall                         |
| Project name:             | ADDITIONAL - KYEEMAGH INFANTS SCHOOL |
| Project ID:               | 80818157                             |
| COC number:               | Not provided                         |
| Turn around time:         | 5 Day                                |
| Date/Time received:       | Nov 22, 2018 12:04 PM                |
| Eurofins   mgt reference: | 629407                               |

## Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Split sample sent to requested external lab.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

# **Contact notes**

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Ben Withnall - ben.withnall@cardno.com.au.

Note: A copy of these results will also be delivered to the general Cardno (NSW/ACT) Pty Ltd email address.



NATA Accreditation Stack Emission Sampling & Analysis Trade Waste Sampling & Analysis Groundwater Sampling & Analysis



38 Years of Environmental Analysis & Experience



# **CERTIFICATE OF ANALYSIS**

| Work Order              | ES1833866                               | Page                    | : 1 of 9                    |                                |
|-------------------------|---|-------------------------|-----------------------------|--------------------------------|
| Client                  | : CARDNO (NSW/ACT) PTY LTD              | Laboratory              | : Environmental Division Sy | /dney                          |
| Contact                 | MR BEN WITHNALL                         | Contact                 | : Customer Services ES      |                                |
| Address                 | E Level 9 The Forum 203 Pacific Highway | Address                 | : 277-289 Woodpark Road     | Smithfield NSW Australia 2164  |
|                         | St Leonards NSW 2065                    |                         |                             |                                |
| Telephone               | : +61 2 9495 8188                       | Telephone               | : +61-2-8784 8555           |                                |
| Project                 | : 80818157 Kyeemagh Infants School      | Date Samples Received   | : 13-Nov-2018 14:30         | MUUU.                          |
| Order number            | :                                       | Date Analysis Commenced | : 15-Nov-2018               |                                |
| C-O-C number            | :                                       | Issue Date              | : 19-Nov-2018 15:37         |                                |
| Sampler                 | : Joel Griffiths                        |                         |                             | HAC-MRA NAIA                   |
| Site                    | :                                       |                         |                             |                                |
| Quote number            | : EN/222 - Secondary Work               |                         |                             | Appreciation No. 835           |
| No. of samples received | :1                                      |                         |                             | Accredited for compliance with |
| No. of samples analysed | : 1                                     |                         |                             | ISO/IEC 17025 - Testing        |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with **Quality Review and Sample Receipt Notification.** 

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| Signatories      | Position              | Accreditation Category             |
|------------------|-----------------------|------------------------------------|
| Alex Rossi       | Organic Chemist       | Sydney Organics, Smithfield, NSW   |
| Celine Conceicao | Senior Spectroscopist | Sydney Inorganics, Smithfield, NSW |
| Edwandy Fadjar   | Organic Coordinator   | Sydney Inorganics, Smithfield, NSW |
| Edwandy Fadjar   | Organic Coordinator   | Sydney Organics, Smithfield, NSW   |



### **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key: CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.



| Sub-Matrix: SOIL<br>(Matrix: SOIL)    |            | Clie        | ent sample ID  | QA200             | <br> | <br> |
|---------------------------------------|------------|-------------|----------------|-------------------|------|------|
|                                       | Cli        | ent samplii | ng date / time | 10-Nov-2018 00:00 | <br> | <br> |
| Compound                              | CAS Number | LOR         | Unit           | ES1833866-001     | <br> | <br> |
|                                       |            |             |                | Result            | <br> | <br> |
| EA055: Moisture Content (Dried @ 105- | -110°C)    |             |                |                   |      |      |
| Moisture Content                      |            | 1.0         | %              | 3.9               | <br> | <br> |
| EG005T: Total Metals by ICP-AES       |            |             |                |                   |      |      |
| Arsenic                               | 7440-38-2  | 5           | mg/kg          | <5                | <br> | <br> |
| Cadmium                               | 7440-43-9  | 1           | mg/kg          | <1                | <br> | <br> |
| Chromium                              | 7440-47-3  | 2           | mg/kg          | <2                | <br> | <br> |
| Copper                                | 7440-50-8  | 5           | mg/kg          | <5                | <br> | <br> |
| Lead                                  | 7439-92-1  | 5           | mg/kg          | 8                 | <br> | <br> |
| Nickel                                | 7440-02-0  | 2           | mg/kg          | <2                | <br> | <br> |
| Zinc                                  | 7440-66-6  | 5           | mg/kg          | 10                | <br> | <br> |
| EG035T: Total Recoverable Mercury by  | y FIMS     |             |                |                   |      |      |
| Mercury                               | 7439-97-6  | 0.1         | mg/kg          | <0.1              | <br> | <br> |
| EP066: Polychlorinated Biphenyls (PC  | 3)         |             |                |                   |      |      |
| Total Polychlorinated biphenyls       |            | 0.1         | mg/kg          | <0.1              | <br> | <br> |
| EP068A: Organochlorine Pesticides (O  | C)         |             |                |                   |      |      |
| alpha-BHC                             | 319-84-6   | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Hexachlorobenzene (HCB)               | 118-74-1   | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| beta-BHC                              | 319-85-7   | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| gamma-BHC                             | 58-89-9    | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| delta-BHC                             | 319-86-8   | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Heptachlor                            | 76-44-8    | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Aldrin                                | 309-00-2   | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Heptachlor epoxide                    | 1024-57-3  | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| ^ Total Chlordane (sum)               |            | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| trans-Chlordane                       | 5103-74-2  | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| alpha-Endosulfan                      | 959-98-8   | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| cis-Chlordane                         | 5103-71-9  | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Dieldrin                              | 60-57-1    | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| 4.4`-DDE                              | 72-55-9    | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Endrin                                | 72-20-8    | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| beta-Endosulfan                       | 33213-65-9 | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| ^ Endosulfan (sum)                    | 115-29-7   | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| 4.4`-DDD                              | 72-54-8    | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Endrin aldehyde                       | 7421-93-4  | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Endosulfan sulfate                    | 1031-07-8  | 0.05        | mg/kg          | <0.05             | <br> | <br> |

| Page       | : 4 of 9                         |
|------------|----------------------------------|
| Work Order | : ES1833866                      |
| Client     | : CARDNO (NSW/ACT) PTY LTD       |
| Project    | 80818157 Kyeemagh Infants School |



| Sub-Matrix: SOIL<br>(Matrix: SOIL) |                    | Clie        | ent sample ID  | QA200             | <br> | <br> |
|------------------------------------|--------------------|-------------|----------------|-------------------|------|------|
|                                    | Cli                | ent samplii | ng date / time | 10-Nov-2018 00:00 | <br> | <br> |
| Compound                           | CAS Number         | LOR         | Unit           | ES1833866-001     | <br> | <br> |
|                                    |                    |             |                | Result            | <br> | <br> |
| EP068A: Organochlorine Pesticides  | s (OC) - Continued |             |                |                   |      |      |
| 4.4`-DDT                           | 50-29-3            | 0.2         | mg/kg          | <0.2              | <br> | <br> |
| Endrin ketone                      | 53494-70-5         | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Methoxychlor                       | 72-43-5            | 0.2         | mg/kg          | <0.2              | <br> | <br> |
| ^ Sum of Aldrin + Dieldrin         | 309-00-2/60-57-1   | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| ^ Sum of DDD + DDE + DDT           | 72-54-8/72-55-9/5  | 0.05        | mg/kg          | <0.05             | <br> | <br> |
|                                    | 0-2                |             |                |                   |      |      |
| EP068B: Organophosphorus Pestic    | cides (OP)         |             |                |                   |      |      |
| Dichlorvos                         | 62-73-7            | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Demeton-S-methyl                   | 919-86-8           | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Monocrotophos                      | 6923-22-4          | 0.2         | mg/kg          | <0.2              | <br> | <br> |
| Dimethoate                         | 60-51-5            | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Diazinon                           | 333-41-5           | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Chlorpyrifos-methyl                | 5598-13-0          | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Parathion-methyl                   | 298-00-0           | 0.2         | mg/kg          | <0.2              | <br> | <br> |
| Malathion                          | 121-75-5           | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Fenthion                           | 55-38-9            | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Chlorpyrifos                       | 2921-88-2          | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Parathion                          | 56-38-2            | 0.2         | mg/kg          | <0.2              | <br> | <br> |
| Pirimphos-ethyl                    | 23505-41-1         | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Chlorfenvinphos                    | 470-90-6           | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Bromophos-ethyl                    | 4824-78-6          | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Fenamiphos                         | 22224-92-6         | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Prothiofos                         | 34643-46-4         | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Ethion                             | 563-12-2           | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Carbophenothion                    | 786-19-6           | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| Azinphos Methyl                    | 86-50-0            | 0.05        | mg/kg          | <0.05             | <br> | <br> |
| EP074A: Monocyclic Aromatic Hyd    | rocarbons          |             |                |                   |      |      |
| Styrene                            | 100-42-5           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Isopropylbenzene                   | 98-82-8            | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| n-Propylbenzene                    | 103-65-1           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| 1.3.5-Trimethylbenzene             | 108-67-8           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| sec-Butylbenzene                   | 135-98-8           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| 1.2.4-Trimethylbenzene             | 95-63-6            | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| tert-Butylbenzene                  | 98-06-6            | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| p-lsopropyltoluene                 | 99-87-6            | 0.5         | mg/kg          | <0.5              | <br> | <br> |



| Sub-Matrix: SOIL<br>(Matrix: SOIL)   |                  | Clie        | ent sample ID  | QA200             | <br> | <br> |
|--------------------------------------|------------------|-------------|----------------|-------------------|------|------|
|                                      | Cli              | ent samplii | ng date / time | 10-Nov-2018 00:00 | <br> | <br> |
| Compound                             | CAS Number       | LOR         | Unit           | ES1833866-001     | <br> | <br> |
|                                      |                  |             |                | Result            | <br> | <br> |
| EP074A: Monocyclic Aromatic Hydrocar | bons - Continued |             |                |                   |      |      |
| n-Butylbenzene                       | 104-51-8         | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| EP074B: Oxygenated Compounds         |                  |             |                |                   |      |      |
| Vinyl Acetate                        | 108-05-4         | 5           | mg/kg          | <5                | <br> | <br> |
| 2-Butanone (MEK)                     | 78-93-3          | 5           | mg/kg          | <5                | <br> | <br> |
| 4-Methyl-2-pentanone (MIBK)          | 108-10-1         | 5           | mg/kg          | <5                | <br> | <br> |
| 2-Hexanone (MBK)                     | 591-78-6         | 5           | mg/kg          | <5                | <br> | <br> |
| EP074C: Sulfonated Compounds         |                  |             |                |                   |      |      |
| Carbon disulfide                     | 75-15-0          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| EP074D: Fumigants                    |                  |             |                |                   |      |      |
| 2.2-Dichloropropane                  | 594-20-7         | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| 1.2-Dichloropropane                  | 78-87-5          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| cis-1.3-Dichloropropylene            | 10061-01-5       | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| trans-1.3-Dichloropropylene          | 10061-02-6       | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| 1.2-Dibromoethane (EDB)              | 106-93-4         | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| EP074E: Halogenated Aliphatic Compou | Inds             |             |                |                   |      |      |
| Dichlorodifluoromethane              | 75-71-8          | 5           | mg/kg          | <5                | <br> | <br> |
| Chloromethane                        | 74-87-3          | 5           | mg/kg          | <5                | <br> | <br> |
| Vinyl chloride                       | 75-01-4          | 5           | mg/kg          | <5                | <br> | <br> |
| Bromomethane                         | 74-83-9          | 5           | mg/kg          | <5                | <br> | <br> |
| Chloroethane                         | 75-00-3          | 5           | mg/kg          | <5                | <br> | <br> |
| Trichlorofluoromethane               | 75-69-4          | 5           | mg/kg          | <5                | <br> | <br> |
| 1.1-Dichloroethene                   | 75-35-4          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| lodomethane                          | 74-88-4          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| trans-1.2-Dichloroethene             | 156-60-5         | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| 1.1-Dichloroethane                   | 75-34-3          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| cis-1.2-Dichloroethene               | 156-59-2         | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| 1.1.1-Trichloroethane                | 71-55-6          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| 1.1-Dichloropropylene                | 563-58-6         | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Carbon Tetrachloride                 | 56-23-5          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| 1.2-Dichloroethane                   | 107-06-2         | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Trichloroethene                      | 79-01-6          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Dibromomethane                       | 74-95-3          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| 1.1.2-Trichloroethane                | 79-00-5          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| 1.3-Dichloropropane                  | 142-28-9         | 0.5         | mg/kg          | <0.5              | <br> | <br> |

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|------------|----------------------------------|
| Work Order | : ES1833866                      |
| Client     | : CARDNO (NSW/ACT) PTY LTD       |
| Project    | 80818157 Kyeemagh Infants School |



| Sub-Matrix: SOIL<br>(Matrix: SOIL)     |                  | Clie       | ent sample ID  | QA200             |  |  |  |  |  |  |  |
|--|------------------|------------|----------------|-------------------|--|--|--|--|--|--|--|
|  | Cli              | ent sampli | ng date / time | 10-Nov-2018 00:00 |  |  |  |  |  |  |  |
| Compound                               | CAS Number       | LOR        | Unit           | ES1833866-001     |  |  |  |  |  |  |  |
|  |                  |            |                | Result            |  |  |  |  |  |  |  |
| EP074E: Halogenated Aliphatic Compo    | unds - Continued |            |                |                   |  |  |  |  |  |  |  |
| Tetrachloroethene                      | 127-18-4         | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| 1.1.1.2-Tetrachloroethane              | 630-20-6         | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| trans-1.4-Dichloro-2-butene            | 110-57-6         | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| cis-1.4-Dichloro-2-butene              | 1476-11-5        | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| 1.1.2.2-Tetrachloroethane              | 79-34-5          | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| 1.2.3-Trichloropropane                 | 96-18-4          | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| Pentachloroethane                      | 76-01-7          | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| 1.2-Dibromo-3-chloropropane            | 96-12-8          | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| Hexachlorobutadiene                    | 87-68-3          | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| EP074F: Halogenated Aromatic Compounds |                  |            |                |                   |  |  |  |  |  |  |  |
| Chlorobenzene                          | 108-90-7         | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| Bromobenzene                           | 108-86-1         | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| 2-Chlorotoluene                        | 95-49-8          | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| 4-Chlorotoluene                        | 106-43-4         | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| 1.3-Dichlorobenzene                    | 541-73-1         | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| 1.4-Dichlorobenzene                    | 106-46-7         | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| 1.2-Dichlorobenzene                    | 95-50-1          | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| 1.2.4-Trichlorobenzene                 | 120-82-1         | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| 1.2.3-Trichlorobenzene                 | 87-61-6          | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| EP074G: Trihalomethanes                |                  |            |                |                   |  |  |  |  |  |  |  |
| Chloroform                             | 67-66-3          | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| Bromodichloromethane                   | 75-27-4          | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| Dibromochloromethane                   | 124-48-1         | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| Bromoform                              | 75-25-2          | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| EP074H: Naphthalene                    |                  |            |                |                   |  |  |  |  |  |  |  |
| Naphthalene                            | 91-20-3          | 1          | mg/kg          | <1                |  |  |  |  |  |  |  |
| EP075(SIM)B: Polynuclear Aromatic Hy   | drocarbons       |            |                |                   |  |  |  |  |  |  |  |
| Naphthalene                            | 91-20-3          | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| Acenaphthylene                         | 208-96-8         | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| Acenaphthene                           | 83-32-9          | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| Fluorene                               | 86-73-7          | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| Phenanthrene                           | 85-01-8          | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| Anthracene                             | 120-12-7         | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |
| Fluoranthene                           | 206-44-0         | 0.5        | mg/kg          | <0.5              |  |  |  |  |  |  |  |

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|------------|----------------------------------|
| Work Order | : ES1833866                      |
| Client     | : CARDNO (NSW/ACT) PTY LTD       |
| Project    | 80818157 Kyeemagh Infants School |



| Sub-Matrix: SOIL<br>(Matrix: SOIL)        |                    | Clie        | ent sample ID  | QA200             | <br> | <br> |
|---|--------------------|-------------|----------------|-------------------|------|------|
|   | Cli                | ent samplii | ng date / time | 10-Nov-2018 00:00 | <br> | <br> |
| Compound                                  | CAS Number         | LOR         | Unit           | ES1833866-001     | <br> | <br> |
|   |                    |             |                | Result            | <br> | <br> |
| EP075(SIM)B: Polynuclear Aromatic H       | ydrocarbons - Cont | inued       |                |                   |      |      |
| Pyrene                                    | 129-00-0           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Benz(a)anthracene                         | 56-55-3            | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Chrysene                                  | 218-01-9           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Benzo(b+j)fluoranthene                    | 205-99-2 205-82-3  | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Benzo(k)fluoranthene                      | 207-08-9           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Benzo(a)pyrene                            | 50-32-8            | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Indeno(1.2.3.cd)pyrene                    | 193-39-5           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Dibenz(a.h)anthracene                     | 53-70-3            | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Benzo(g.h.i)perylene                      | 191-24-2           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| ^ Sum of polycyclic aromatic hydrocarbon  | s                  | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| ^ Benzo(a)pyrene TEQ (zero)               |                    | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| ^ Benzo(a)pyrene TEQ (half LOR)           |                    | 0.5         | mg/kg          | 0.6               | <br> | <br> |
| ^ Benzo(a)pyrene TEQ (LOR)                |                    | 0.5         | mg/kg          | 1.2               | <br> | <br> |
| EP080/071: Total Petroleum Hydrocarl      | oons               |             |                |                   |      |      |
| C6 - C9 Fraction                          |                    | 10          | mg/kg          | <10               | <br> | <br> |
| C10 - C14 Fraction                        |                    | 50          | mg/kg          | <50               | <br> | <br> |
| C15 - C28 Fraction                        |                    | 100         | mg/kg          | <100              | <br> | <br> |
| C29 - C36 Fraction                        |                    | 100         | mg/kg          | <100              | <br> | <br> |
| ^ C10 - C36 Fraction (sum)                |                    | 50          | mg/kg          | <50               | <br> | <br> |
| EP080/071: Total Recoverable Hydroc       | arbons - NEPM 201  | 3 Fraction  | ıs             |                   |      |      |
| C6 - C10 Fraction                         | C6_C10             | 10          | mg/kg          | <10               | <br> | <br> |
| <sup>^</sup> C6 - C10 Fraction minus BTEX | C6_C10-BTEX        | 10          | mg/kg          | <10               | <br> | <br> |
| (F1)                                      |                    |             |                |                   |      |      |
| >C10 - C16 Fraction                       |                    | 50          | mg/kg          | <50               | <br> | <br> |
| >C16 - C34 Fraction                       |                    | 100         | mg/kg          | <100              | <br> | <br> |
| >C34 - C40 Fraction                       |                    | 100         | mg/kg          | <100              | <br> | <br> |
| ^ >C10 - C40 Fraction (sum)               |                    | 50          | mg/kg          | <50               | <br> | <br> |
| ^ >C10 - C16 Fraction minus Naphthalene   |                    | 50          | mg/kg          | <50               | <br> | <br> |
| (F2)                                      |                    |             |                |                   |      |      |
| EP080: BTEXN                              |                    |             |                |                   |      |      |
| Benzene                                   | 71-43-2            | 0.2         | mg/kg          | <0.2              | <br> | <br> |
| Toluene                                   | 108-88-3           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Ethylbenzene                              | 100-41-4           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| meta- & para-Xylene                       | 108-38-3 106-42-3  | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| ortho-Xylene                              | 95-47-6            | 0.5         | mg/kg          | <0.5              | <br> | <br> |



| Sub-Matrix: SOIL<br>(Matrix: SOIL)         | Client sample ID |             | QA200          |                   |  |  |  |  |
|--|------------------|-------------|----------------|-------------------|--|--|--|--|
|  | Cli              | ient sampli | ng date / time | 10-Nov-2018 00:00 |  |  |  |  |
| Compound                                   | CAS Number       | LOR         | Unit           | ES1833866-001     |  |  |  |  |
|  |                  |             |                | Result            |  |  |  |  |
| EP080: BTEXN - Continued                   |                  |             |                |                   |  |  |  |  |
| ^ Sum of BTEX                              |                  | 0.2         | mg/kg          | <0.2              |  |  |  |  |
| ^ Total Xylenes                            |                  | 0.5         | mg/kg          | <0.5              |  |  |  |  |
| Naphthalene                                | 91-20-3          | 1           | mg/kg          | <1                |  |  |  |  |
| EP066S: PCB Surrogate                      |                  |             |                |                   |  |  |  |  |
| Decachlorobiphenyl                         | 2051-24-3        | 0.1         | %              | 90.5              |  |  |  |  |
| EP068S: Organochlorine Pesticide Surrogate |                  |             |                |                   |  |  |  |  |
| Dibromo-DDE                                | 21655-73-2       | 0.05        | %              | 104               |  |  |  |  |
| EP068T: Organophosphorus Pesticide         | e Surrogate      |             |                |                   |  |  |  |  |
| DEF  | 78-48-8          | 0.05        | %              | 70.1              |  |  |  |  |
| EP074S: VOC Surrogates                     |                  |             |                |                   |  |  |  |  |
| 1.2-Dichloroethane-D4                      | 17060-07-0       | 0.5         | %              | 87.4              |  |  |  |  |
| Toluene-D8                                 | 2037-26-5        | 0.5         | %              | 99.2              |  |  |  |  |
| 4-Bromofluorobenzene                       | 460-00-4         | 0.5         | %              | 96.0              |  |  |  |  |
| EP075(SIM)S: Phenolic Compound Su          | irrogates        |             |                |                   |  |  |  |  |
| Phenol-d6                                  | 13127-88-3       | 0.5         | %              | 94.8              |  |  |  |  |
| 2-Chlorophenol-D4                          | 93951-73-6       | 0.5         | %              | 83.6              |  |  |  |  |
| 2.4.6-Tribromophenol                       | 118-79-6         | 0.5         | %              | 55.6              |  |  |  |  |
| EP075(SIM)T: PAH Surrogates                |                  |             |                |                   |  |  |  |  |
| 2-Fluorobiphenyl                           | 321-60-8         | 0.5         | %              | 90.8              |  |  |  |  |
| Anthracene-d10                             | 1719-06-8        | 0.5         | %              | 91.8              |  |  |  |  |
| 4-Terphenyl-d14                            | 1718-51-0        | 0.5         | %              | 94.0              |  |  |  |  |
| EP080S: TPH(V)/BTEX Surrogates             |                  |             |                |                   |  |  |  |  |
| 1.2-Dichloroethane-D4                      | 17060-07-0       | 0.2         | %              | 93.1              |  |  |  |  |
| Toluene-D8                                 | 2037-26-5        | 0.2         | %              | 100               |  |  |  |  |
| 4-Bromofluorobenzene                       | 460-00-4         | 0.2         | %              | 98.3              |  |  |  |  |



# Surrogate Control Limits

| Sub-Matrix: SOIL                     |            | Recovery | Limits (%) |
|--------------------------------------|------------|----------|------------|
| Compound                             | CAS Number | Low      | High       |
| EP066S: PCB Surrogate                |            |          |            |
| Decachlorobiphenyl                   | 2051-24-3  | 39       | 149        |
| EP068S: Organochlorine Pesticide Sur | rogate     |          |            |
| Dibromo-DDE                          | 21655-73-2 | 49       | 147        |
| EP068T: Organophosphorus Pesticide   | Surrogate  |          |            |
| DEF                                  | 78-48-8    | 35       | 143        |
| EP074S: VOC Surrogates               |            |          |            |
| 1.2-Dichloroethane-D4                | 17060-07-0 | 64       | 130        |
| Toluene-D8                           | 2037-26-5  | 66       | 136        |
| 4-Bromofluorobenzene                 | 460-00-4   | 60       | 122        |
| EP075(SIM)S: Phenolic Compound Sur   | rogates    |          |            |
| Phenol-d6                            | 13127-88-3 | 63       | 123        |
| 2-Chlorophenol-D4                    | 93951-73-6 | 66       | 122        |
| 2.4.6-Tribromophenol                 | 118-79-6   | 40       | 138        |
| EP075(SIM)T: PAH Surrogates          |            |          |            |
| 2-Fluorobiphenyl                     | 321-60-8   | 70       | 122        |
| Anthracene-d10                       | 1719-06-8  | 66       | 128        |
| 4-Terphenyl-d14                      | 1718-51-0  | 65       | 129        |
| EP080S: TPH(V)/BTEX Surrogates       |            |          |            |
| 1.2-Dichloroethane-D4                | 17060-07-0 | 73       | 133        |
| Toluene-D8                           | 2037-26-5  | 74       | 132        |
| 4-Bromofluorobenzene                 | 460-00-4   | 72       | 130        |



# QUALITY CONTROL REPORT

| Work Order              | : ES1833866   | Page                    | : 1 of 14                   |                                |
|-------------------------|---|-------------------------|-----------------------------|--------------------------------|
| Client                  | : CARDNO (NSW/ACT) PTY LTD                                      | Laboratory              | : Environmental Division Sy | dney                           |
| Contact                 | : MR BEN WITHNALL   | Contact                 | : Customer Services ES      |                                |
| Address                 | : Level 9 The Forum 203 Pacific Highway<br>St Leonards NSW 2065 | Address                 | : 277-289 Woodpark Road     | Smithfield NSW Australia 2164  |
| Telephone               | : +61 2 9495 8188   | Telephone               | : +61-2-8784 8555           |                                |
| Project                 | : 80818157 Kyeemagh Infants School                              | Date Samples Received   | : 13-Nov-2018               | WIIIII.                        |
| Order number            | :   | Date Analysis Commenced | : 15-Nov-2018               |                                |
| C-O-C number            | :   | Issue Date              | : 19-Nov-2018               | NATA                           |
| Sampler                 | : Joel Griffiths  |                         |                             | Hac-MRA NATA                   |
| Site                    | :   |                         |                             |                                |
| Quote number            | : EN/222 - Secondary Work                                       |                         |                             | Accreditation No. 825          |
| No. of samples received | : 1   |                         |                             | Accredited for compliance with |
| No. of samples analysed | : 1   |                         |                             | ISO/IEC 17025 - Testing        |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full. This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| Signatories      | Position              | Accreditation Category             |
|------------------|-----------------------|------------------------------------|
| Alex Rossi       | Organic Chemist       | Sydney Organics, Smithfield, NSW   |
| Celine Conceicao | Senior Spectroscopist | Sydney Inorganics, Smithfield, NSW |
| Edwandy Fadjar   | Organic Coordinator   | Sydney Inorganics, Smithfield, NSW |
| Edwandy Fadjar   | Organic Coordinator   | Sydney Organics, Smithfield, NSW   |



#### **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key: Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

# = Indicates failed QC

### Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

| Sub-Matrix: SOIL     |                              |  | Laboratory Duplicate (DUP) Report |      |       |                 |                  |         |                     |
|----------------------|------------------------------|--|-----------------------------------|------|-------|-----------------|------------------|---------|---------------------|
| Laboratory sample ID | Client sample ID             | Method: Compound                       | CAS Number                        | LOR  | Unit  | Original Result | Duplicate Result | RPD (%) | Recovery Limits (%) |
| EA055: Moisture Co   | ntent (Dried @ 105-110°C) (0 | QC Lot: 2038764)                       |                                   |      |       |                 |                  |         |                     |
| ES1833836-021        | Anonymous                    | EA055: Moisture Content                |                                   | 0.1  | %     | 2.5             | 2.3              | 8.03    | No Limit            |
| ES1833855-001        | Anonymous                    | EA055: Moisture Content                |                                   | 0.1  | %     | 11.1            | 9.5              | 16.1    | 0% - 20%            |
| EG005T: Total Metal  | s by ICP-AES (QC Lot: 2040   | 220)                                   |                                   |      |       |                 |                  |         |                     |
| ES1833912-003        | Anonymous                    | EG005T: Cadmium                        | 7440-43-9                         | 1    | mg/kg | <1              | <1               | 0.00    | No Limit            |
|                      |                              | EG005T: Chromium                       | 7440-47-3                         | 2    | mg/kg | 29              | 34               | 15.1    | 0% - 50%            |
|                      |                              | EG005T: Nickel                         | 7440-02-0                         | 2    | mg/kg | 15              | 15               | 0.00    | No Limit            |
|                      |                              | EG005T: Arsenic                        | 7440-38-2                         | 5    | mg/kg | 8               | 6                | 32.0    | No Limit            |
|                      |                              | EG005T: Copper                         | 7440-50-8                         | 5    | mg/kg | 37              | 34               | 8.78    | No Limit            |
|                      |                              | EG005T: Lead                           | 7439-92-1                         | 5    | mg/kg | 147             | 164              | 11.2    | 0% - 20%            |
|                      |                              | EG005T: Zinc                           | 7440-66-6                         | 5    | mg/kg | 100             | 85               | 15.6    | 0% - 50%            |
| ES1833803-001        | Anonymous                    | EG005T: Cadmium                        | 7440-43-9                         | 1    | mg/kg | <1              | <1               | 0.00    | No Limit            |
|                      |                              | EG005T: Chromium                       | 7440-47-3                         | 2    | mg/kg | 18              | 18               | 0.00    | No Limit            |
|                      |                              | EG005T: Nickel                         | 7440-02-0                         | 2    | mg/kg | 18              | 17               | 0.00    | No Limit            |
|                      |                              | EG005T: Arsenic                        | 7440-38-2                         | 5    | mg/kg | 9               | 8                | 19.1    | No Limit            |
|                      |                              | EG005T: Copper                         | 7440-50-8                         | 5    | mg/kg | 190             | 194              | 2.17    | 0% - 20%            |
|                      |                              | EG005T: Lead                           | 7439-92-1                         | 5    | mg/kg | 283             | 310              | 9.06    | 0% - 20%            |
|                      |                              | EG005T: Zinc                           | 7440-66-6                         | 5    | mg/kg | 590             | 568              | 3.92    | 0% - 20%            |
| EG035T: Total Reco   | overable Mercury by FIMS (O  | QC Lot: 2040221)                       |                                   |      |       |                 |                  |         |                     |
| ES1833912-003        | Anonymous                    | EG035T: Mercury                        | 7439-97-6                         | 0.1  | mg/kg | 0.7             | 0.1              | 148     | No Limit            |
| ES1833803-001        | Anonymous                    | EG035T: Mercury                        | 7439-97-6                         | 0.1  | mg/kg | 1.0             | 1.5              | 38.6    | 0% - 50%            |
| EP066: Polychlorina  | ted Biphenyls (PCB) (QC Lo   | ot: 2036442)                           |                                   |      |       |                 |                  |         |                     |
| ES1833803-001        | Anonymous                    | EP066: Total Polychlorinated biphenyls |                                   | 0.1  | mg/kg | <0.1            | <0.1             | 0.00    | No Limit            |
| EP068A: Organochl    | orine Pesticides (OC) (QC L  | ot: 2036441)                           |                                   |      |       |                 |                  |         |                     |
| ES1833803-001        | Anonymous                    | EP068: alpha-BHC                       | 319-84-6                          | 0.05 | mg/kg | <0.05           | <0.05            | 0.00    | No Limit            |

| Page       | : 3 of 14                          |
|------------|------------------------------------|
| Work Order | : ES1833866                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : 80818157 Kyeemagh Infants School |



| Sub-Matrix: SOIL     |                           |                                |            |       |       | Laboratory      | Duplicate (DUP) Report | t        |                     |
|----------------------|---------------------------|--------------------------------|------------|-------|-------|-----------------|------------------------|----------|---------------------|
| Laboratory sample ID | Client sample ID          | Method: Compound               | CAS Number | LOR   | Unit  | Original Result | Duplicate Result       | RPD (%)  | Recovery Limits (%) |
| EP068A: Organochlo   | orine Pesticides (OC) (QC | Lot: 2036441) - continued      |            |       |       |                 |                        |          |                     |
| ES1833803-001        | Anonymous                 | EP068: Hexachlorobenzene (HCB) | 118-74-1   | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: beta-BHC                | 319-85-7   | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: gamma-BHC               | 58-89-9    | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: delta-BHC               | 319-86-8   | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Heptachlor              | 76-44-8    | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Aldrin                  | 309-00-2   | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Heptachlor epoxide      | 1024-57-3  | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: trans-Chlordane         | 5103-74-2  | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: alpha-Endosulfan        | 959-98-8   | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: cis-Chlordane           | 5103-71-9  | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Dieldrin                | 60-57-1    | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: 4.4`-DDE                | 72-55-9    | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Endrin                  | 72-20-8    | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: beta-Endosulfan         | 33213-65-9 | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: 4.4`-DDD                | 72-54-8    | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      | EP068: Endrin aldehyde    | 7421-93-4                      | 0.05       | mg/kg | <0.05 | <0.05           | 0.00                   | No Limit |                     |
|                      |                           | EP068: Endosulfan sulfate      | 1031-07-8  | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Endrin ketone           | 53494-70-5 | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: 4.4`-DDT                | 50-29-3    | 0.2   | mg/kg | <0.2            | <0.2                   | 0.00     | No Limit            |
|                      |                           | EP068: Methoxychlor            | 72-43-5    | 0.2   | mg/kg | <0.2            | <0.2                   | 0.00     | No Limit            |
| EP068B: Organopho    | sphorus Pesticides (OP)   | (QC Lot: 2036441)              |            |       |       |                 |                        |          |                     |
| ES1833803-001        | Anonymous                 | EP068: Dichlorvos              | 62-73-7    | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Demeton-S-methyl        | 919-86-8   | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Dimethoate              | 60-51-5    | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Diazinon                | 333-41-5   | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Chlorpyrifos-methyl     | 5598-13-0  | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Malathion               | 121-75-5   | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Fenthion                | 55-38-9    | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Chlorpyrifos            | 2921-88-2  | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Pirimphos-ethyl         | 23505-41-1 | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Chlorfenvinphos         | 470-90-6   | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Bromophos-ethyl         | 4824-78-6  | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Fenamiphos              | 22224-92-6 | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Prothiofos              | 34643-46-4 | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Ethion                  | 563-12-2   | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Carbophenothion         | 786-19-6   | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Azinphos Methyl         | 86-50-0    | 0.05  | mg/kg | <0.05           | <0.05                  | 0.00     | No Limit            |
|                      |                           | EP068: Monocrotophos           | 6923-22-4  | 0.2   | mg/kg | <0.2            | <0.2                   | 0.00     | No Limit            |
|                      |                           | EP068: Parathion-methyl        | 298-00-0   | 0.2   | mg/kg | <0.2            | <0.2                   | 0.00     | No Limit            |
|                      |                           | EP068 <sup>.</sup> Parathion   | 56-38-2    | 0.2   | mg/kg | <0.2            | <0.2                   | 0.00     | No Limit            |

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|------------|------------------------------------|
| Work Order | : ES1833866                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : 80818157 Kyeemagh Infants School |



| Sub-Matrix: SOIL     |                      |                                    |            |     |       | Laboratory      | Duplicate (DUP) Report | •       |                     |
|----------------------|----------------------|------------------------------------|------------|-----|-------|-----------------|------------------------|---------|---------------------|
| Laboratory sample ID | Client sample ID     | Method: Compound                   | CAS Number | LOR | Unit  | Original Result | Duplicate Result       | RPD (%) | Recovery Limits (%) |
| EP074A: Monocycli    | c Aromatic Hydrocarb | oons (QC Lot: 2037823)             |            |     |       |                 |                        |         |                     |
| ES1834031-003        | Anonymous            | EP074: Styrene                     | 100-42-5   | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: Isopropylbenzene            | 98-82-8    | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: n-Propylbenzene             | 103-65-1   | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: 1.3.5-Trimethylbenzene      | 108-67-8   | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: sec-Butylbenzene            | 135-98-8   | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: 1.2.4-Trimethylbenzene      | 95-63-6    | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: tert-Butylbenzene           | 98-06-6    | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: p-lsopropyltoluene          | 99-87-6    | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: n-Butylbenzene              | 104-51-8   | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
| ES1834013-004        | Anonymous            | EP074: Styrene                     | 100-42-5   | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: Isopropylbenzene            | 98-82-8    | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: n-Propylbenzene             | 103-65-1   | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: 1.3.5-Trimethylbenzene      | 108-67-8   | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: sec-Butylbenzene            | 135-98-8   | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: 1.2.4-Trimethylbenzene      | 95-63-6    | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: tert-Butylbenzene           | 98-06-6    | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: p-Isopropyltoluene          | 99-87-6    | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: n-Butylbenzene              | 104-51-8   | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
| EP074B: Oxygenate    | d Compounds (QC Lo   | ot: 2037823)                       |            |     |       |                 |                        |         |                     |
| ES1834031-003        | Anonymous            | EP074: Vinyl Acetate               | 108-05-4   | 5   | mg/kg | <5              | <5                     | 0.00    | No Limit            |
|                      |                      | EP074: 2-Butanone (MEK)            | 78-93-3    | 5   | mg/kg | <5              | <5                     | 0.00    | No Limit            |
|                      |                      | EP074: 4-Methyl-2-pentanone (MIBK) | 108-10-1   | 5   | mg/kg | <5              | <5                     | 0.00    | No Limit            |
|                      |                      | EP074: 2-Hexanone (MBK)            | 591-78-6   | 5   | mg/kg | <5              | <5                     | 0.00    | No Limit            |
| ES1834013-004        | Anonymous            | EP074: Vinyl Acetate               | 108-05-4   | 5   | mg/kg | <5              | <5                     | 0.00    | No Limit            |
|                      |                      | EP074: 2-Butanone (MEK)            | 78-93-3    | 5   | mg/kg | <5              | <5                     | 0.00    | No Limit            |
|                      |                      | EP074: 4-Methyl-2-pentanone (MIBK) | 108-10-1   | 5   | mg/kg | <5              | <5                     | 0.00    | No Limit            |
|                      |                      | EP074: 2-Hexanone (MBK)            | 591-78-6   | 5   | mg/kg | <5              | <5                     | 0.00    | No Limit            |
| EP074C: Sulfonated   | Compounds (QC Lot    | t: 2037823)                        |            |     |       |                 |                        |         |                     |
| ES1834031-003        | Anonymous            | EP074: Carbon disulfide            | 75-15-0    | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
| ES1834013-004        | Anonymous            | EP074: Carbon disulfide            | 75-15-0    | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
| EP074D: Fumigants    | (QC Lot: 2037823)    |                                    |            |     |       |                 |                        |         |                     |
| ES1834031-003        | Anonymous            | EP074: 2.2-Dichloropropane         | 594-20-7   | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: 1.2-Dichloropropane         | 78-87-5    | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: cis-1.3-Dichloropropylene   | 10061-01-5 | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: trans-1.3-Dichloropropylene | 10061-02-6 | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: 1.2-Dibromoethane (EDB)     | 106-93-4   | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
| ES1834013-004        | Anonymous            | EP074: 2.2-Dichloropropane         | 594-20-7   | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: 1.2-Dichloropropane         | 78-87-5    | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: cis-1.3-Dichloropropylene   | 10061-01-5 | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                      | EP074: trans-1.3-Dichloropropylene | 10061-02-6 | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |

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|------------|------------------------------------|
| Work Order | : ES1833866                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : 80818157 Kyeemagh Infants School |



| Sub-Matrix: SOIL        |                                    |                                    |            |       |       | Laboratory L    | Ouplicate (DUP) Report |          |                     |
|-------------------------|------------------------------------|------------------------------------|------------|-------|-------|-----------------|------------------------|----------|---------------------|
| Laboratory sample ID    | Client sample ID                   | Method: Compound                   | CAS Number | LOR   | Unit  | Original Result | Duplicate Result       | RPD (%)  | Recovery Limits (%) |
| EP074D: Fumigants       | (QC Lot: 2037823) - contin         | ued                                |            |       |       |                 |                        |          |                     |
| ES1834013-004           | Anonymous                          | EP074: 1.2-Dibromoethane (EDB)     | 106-93-4   | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
| EP074E: Halogenated     | Aliphatic Compounds (Q             | C Lot: 2037823)                    |            |       |       |                 |                        |          |                     |
| ES1834031-003 Anonymous |                                    | EP074: 1.1-Dichloroethene          | 75-35-4    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: Iodomethane                 | 74-88-4    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: trans-1.2-Dichloroethene    | 156-60-5   | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: 1.1-Dichloroethane          | 75-34-3    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: cis-1.2-Dichloroethene      | 156-59-2   | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: 1.1.1-Trichloroethane       | 71-55-6    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: 1.1-Dichloropropylene       | 563-58-6   | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: Carbon Tetrachloride        | 56-23-5    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: 1.2-Dichloroethane          | 107-06-2   | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: Trichloroethene             | 79-01-6    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: Dibromomethane              | 74-95-3    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: 1.1.2-Trichloroethane       | 79-00-5    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: 1.3-Dichloropropane         | 142-28-9   | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: Tetrachloroethene           | 127-18-4   | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: 1.1.1.2-Tetrachloroethane   | 630-20-6   | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         | EP074: trans-1.4-Dichloro-2-butene | 110-57-6                           | 0.5        | mg/kg | <0.5  | <0.5            | 0.00                   | No Limit |                     |
|                         |                                    | EP074: cis-1.4-Dichloro-2-butene   | 1476-11-5  | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: 1.1.2.2-Tetrachloroethane   | 79-34-5    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: 1.2.3-Trichloropropane      | 96-18-4    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: Pentachloroethane           | 76-01-7    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: 1.2-Dibromo-3-chloropropane | 96-12-8    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: Hexachlorobutadiene         | 87-68-3    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: Dichlorodifluoromethane     | 75-71-8    | 5     | mg/kg | <5              | <5                     | 0.00     | No Limit            |
|                         |                                    | EP074: Chloromethane               | 74-87-3    | 5     | mg/kg | <5              | <5                     | 0.00     | No Limit            |
|                         |                                    | EP074: Vinyl chloride              | 75-01-4    | 5     | mg/kg | <5              | <5                     | 0.00     | No Limit            |
|                         |                                    | EP074: Bromomethane                | 74-83-9    | 5     | mg/kg | <5              | <5                     | 0.00     | No Limit            |
|                         |                                    | EP074: Chloroethane                | 75-00-3    | 5     | mg/kg | <5              | <5                     | 0.00     | No Limit            |
|                         |                                    | EP074: Trichlorofluoromethane      | 75-69-4    | 5     | mg/kg | <5              | <5                     | 0.00     | No Limit            |
| ES1834013-004           | Anonymous                          | EP074: 1.1-Dichloroethene          | 75-35-4    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: Iodomethane                 | 74-88-4    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: trans-1.2-Dichloroethene    | 156-60-5   | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: 1.1-Dichloroethane          | 75-34-3    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: cis-1.2-Dichloroethene      | 156-59-2   | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: 1.1.1-Trichloroethane       | 71-55-6    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: 1.1-Dichloropropylene       | 563-58-6   | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: Carbon Tetrachloride        | 56-23-5    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: 1.2-Dichloroethane          | 107-06-2   | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |
|                         |                                    | EP074: Trichloroethene             | 79-01-6    | 0.5   | mg/kg | <0.5            | <0.5                   | 0.00     | No Limit            |

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|------------|------------------------------------|
| Work Order | : ES1833866                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : 80818157 Kyeemagh Infants School |



| Sub-Matrix: SOIL     |                            |                                    |            | Laboratory Duplicate (DUP) Report |       |                 |                  |         |                     |
|----------------------|----------------------------|------------------------------------|------------|-----------------------------------|-------|-----------------|------------------|---------|---------------------|
| Laboratory sample ID | Client sample ID           | Method: Compound                   | CAS Number | LOR                               | Unit  | Original Result | Duplicate Result | RPD (%) | Recovery Limits (%) |
| EP074E: Halogenated  | Aliphatic Compoun          | ds (QC Lot: 2037823) - continued   |            |                                   |       |                 |                  |         |                     |
| ES1834013-004        | Anonymous                  | EP074: Dibromomethane              | 74-95-3    | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 1.1.2-Trichloroethane       | 79-00-5    | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 1.3-Dichloropropane         | 142-28-9   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: Tetrachloroethene           | 127-18-4   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 1.1.1.2-Tetrachloroethane   | 630-20-6   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: trans-1.4-Dichloro-2-butene | 110-57-6   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: cis-1.4-Dichloro-2-butene   | 1476-11-5  | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 1.1.2.2-Tetrachloroethane   | 79-34-5    | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 1.2.3-Trichloropropane      | 96-18-4    | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: Pentachloroethane           | 76-01-7    | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 1.2-Dibromo-3-chloropropane | 96-12-8    | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: Hexachlorobutadiene         | 87-68-3    | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: Dichlorodifluoromethane     | 75-71-8    | 5                                 | mg/kg | <5              | <5               | 0.00    | No Limit            |
|                      |                            | EP074: Chloromethane               | 74-87-3    | 5                                 | mg/kg | <5              | <5               | 0.00    | No Limit            |
|                      |                            | EP074: Vinyl chloride              | 75-01-4    | 5                                 | mg/kg | <5              | <5               | 0.00    | No Limit            |
|                      |                            | EP074: Bromomethane                | 74-83-9    | 5                                 | mg/kg | <5              | <5               | 0.00    | No Limit            |
|                      |                            | EP074: Chloroethane                | 75-00-3    | 5                                 | mg/kg | <5              | <5               | 0.00    | No Limit            |
|                      |                            | EP074: Trichlorofluoromethane      | 75-69-4    | 5                                 | mg/kg | <5              | <5               | 0.00    | No Limit            |
| EP074F: Halogenated  | Aromatic Compoun           | ds (QC Lot: 2037823)               |            |                                   |       |                 |                  |         |                     |
| ES1834031-003        | ES1834031-003 Anonymous    | EP074: Chlorobenzene               | 108-90-7   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: Bromobenzene                | 108-86-1   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 2-Chlorotoluene             | 95-49-8    | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 4-Chlorotoluene             | 106-43-4   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 1.3-Dichlorobenzene         | 541-73-1   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 1.4-Dichlorobenzene         | 106-46-7   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 1.2-Dichlorobenzene         | 95-50-1    | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 1.2.4-Trichlorobenzene      | 120-82-1   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 1.2.3-Trichlorobenzene      | 87-61-6    | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
| ES1834013-004        | Anonymous                  | EP074: Chlorobenzene               | 108-90-7   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: Bromobenzene                | 108-86-1   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 2-Chlorotoluene             | 95-49-8    | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 4-Chlorotoluene             | 106-43-4   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 1.3-Dichlorobenzene         | 541-73-1   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 1.4-Dichlorobenzene         | 106-46-7   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 1.2-Dichlorobenzene         | 95-50-1    | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 1.2.4-Trichlorobenzene      | 120-82-1   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: 1.2.3-Trichlorobenzene      | 87-61-6    | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
| EP074G: Trihalometh  | anes (QC <u>Lot: 20378</u> | 323)                               |            |                                   |       |                 |                  |         |                     |
| ES1834031-003        | Anonymous                  | EP074: Chloroform                  | 67-66-3    | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP074: Bromodichloromethane        | 75-27-4    | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |

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| Work Order | ES1833866                          |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : 80818157 Kyeemagh Infants School |



| Sub-Matrix: SOIL     |                                  |  |            |     |       | Laboratory D    | Duplicate (DUP) Report |         |                     |
|----------------------|----------------------------------|--|------------|-----|-------|-----------------|------------------------|---------|---------------------|
| Laboratory sample ID | Client sample ID                 | Method: Compound                       | CAS Number | LOR | Unit  | Original Result | Duplicate Result       | RPD (%) | Recovery Limits (%) |
| EP074G: Trihalometh  | nanes (QC Lot: 2037823) -        | continued                              |            |     |       |                 |                        |         |                     |
| ES1834031-003        | Anonymous                        | EP074: Dibromochloromethane            | 124-48-1   | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                                  | EP074: Bromoform                       | 75-25-2    | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
| ES1834013-004        | Anonymous                        | EP074: Chloroform                      | 67-66-3    | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                                  | EP074: Bromodichloromethane            | 75-27-4    | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                                  | EP074: Dibromochloromethane            | 124-48-1   | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                                  | EP074: Bromoform                       | 75-25-2    | 0.5 | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
| EP074H: Naphthalen   | e (QC Lot: 2037823)              |  |            |     |       |                 |                        |         |                     |
| ES1834031-003        | Anonymous                        | EP074: Naphthalene                     | 91-20-3    | 1   | mg/kg | <1              | <1                     | 0.00    | No Limit            |
| ES1834013-004        | Anonymous                        | EP074: Naphthalene                     | 91-20-3    | 1   | mg/kg | <1              | <1                     | 0.00    | No Limit            |
| EP075(SIM)B: Polynu  | Iclear Aromatic Hydrocarb        | ons (QC Lot: 2036440)                  |            |     |       |                 |                        |         |                     |
| ES1833803-001        | Anonymous                        | EP075(SIM): Naphthalene                | 91-20-3    | 0.5 | ma/ka | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      | .,                               | EP075(SIM): Acenaphthylene             | 208-96-8   | 0.5 | ma/ka | 0.9             | 0.8                    | 0.00    | No Limit            |
|                      |                                  | EP075(SIM): Acenaphthene               | 83-32-9    | 0.5 | ma/ka | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                                  | EP075(SIM): Fluorene                   | 86-73-7    | 0.5 | ma/ka | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                                  | EP075(SIM): Phenanthrene               | 85-01-8    | 0.5 | mg/kg | 2.8             | 2.6                    | 8.23    | No Limit            |
|                      |                                  | EP075(SIM): Anthracene                 | 120-12-7   | 0.5 | mg/kg | 1.1             | 0.9                    | 20.5    | No Limit            |
|                      |                                  | EP075(SIM): Fluoranthene               | 206-44-0   | 0.5 | mg/kg | 6.6             | 6.4                    | 2.42    | 0% - 50%            |
|                      |                                  | EP075(SIM): Pvrene                     | 129-00-0   | 0.5 | mg/kg | 6.2             | 6.3                    | 2.32    | 0% - 50%            |
|                      |                                  | EP075(SIM): Benz(a)anthracene          | 56-55-3    | 0.5 | mg/kg | 4.6             | 4.3                    | 6.04    | No Limit            |
|                      |                                  | EP075(SIM): Chrysene                   | 218-01-9   | 0.5 | mg/kg | 3.6             | 3.4                    | 4.54    | No Limit            |
|                      |                                  | EP075(SIM): Benzo(b+i)fluoranthene     | 205-99-2   | 0.5 | mg/kg | 5.4             | 5.7                    | 6.36    | 0% - 50%            |
|                      |                                  |  | 205-82-3   |     | 0.0   |                 |                        |         |                     |
|                      |                                  | EP075(SIM): Benzo(k)fluoranthene       | 207-08-9   | 0.5 | mg/kg | 1.9             | 2.0                    | 0.00    | No Limit            |
|                      |                                  | EP075(SIM): Benzo(a)pyrene             | 50-32-8    | 0.5 | mg/kg | 4.3             | 4.7                    | 8.53    | No Limit            |
|                      |                                  | EP075(SIM): Indeno(1.2.3.cd)pyrene     | 193-39-5   | 0.5 | mg/kg | 2.1             | 2.4                    | 10.2    | No Limit            |
|                      |                                  | EP075(SIM): Dibenz(a.h)anthracene      | 53-70-3    | 0.5 | mg/kg | 0.5             | 0.6                    | 0.00    | No Limit            |
|                      |                                  | EP075(SIM): Benzo(g.h.i)perylene       | 191-24-2   | 0.5 | mg/kg | 2.9             | 3.1                    | 7.92    | No Limit            |
|                      |                                  | EP075(SIM): Sum of polycyclic aromatic |            | 0.5 | mg/kg | 42.9            | 43.2                   | 0.697   | 0% - 20%            |
|                      |                                  | hydrocarbons                           |            |     |       |                 |                        |         |                     |
|                      |                                  | EP075(SIM): Benzo(a)pyrene TEQ (zero)  |            | 0.5 | mg/kg | 6.3             | 6.8                    | 8.26    | 0% - 50%            |
| EP080/071: Total Pet | roleum Hydrocarbons (QC          | ELot: 2036439)                         |            |     |       |                 |                        |         |                     |
| ES1833803-001        | Anonymous                        | EP071: C15 - C28 Fraction              |            | 100 | mg/kg | 190             | 160                    | 17.4    | No Limit            |
|                      |                                  | EP071: C29 - C36 Fraction              |            | 100 | mg/kg | 140             | 140                    | 0.00    | No Limit            |
|                      |                                  | EP071: C10 - C14 Fraction              |            | 50  | mg/kg | <50             | <50                    | 0.00    | No Limit            |
| EP080/071: Total Pet | roleum Hydro <u>carbons_(Q</u> C | Lot: 2037822)                          |            |     |       |                 |                        |         |                     |
| ES1834013-004        | Anonymous                        | EP080: C6 - C9 Fraction                |            | 10  | mg/kg | <10             | <10                    | 0.00    | No Limit            |
| EP080/071: Total Rec | overable Hydrocarbons - I        | NEPM 2013 Fractions (QC Lot: 2036439)  |            |     |       |                 |                        |         |                     |
| ES1833803-001        | Anonymous                        | EP071: >C16 - C34 Fraction             |            | 100 | ma/ka | 290             | 250                    | 14.6    | No Limit            |
|                      | ,                                | EP071: >C34 - C40 Fraction             |            | 100 | mg/kg | <100            | <100                   | 0.00    | No Limit            |

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| Work Order | : ES1833866                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : 80818157 Kyeemagh Infants School |



| Sub-Matrix: SOIL     |                           |   |            | Laboratory Duplicate (DUP) Report |       |                 |                  |         |                     |
|----------------------|---------------------------|---|------------|-----------------------------------|-------|-----------------|------------------|---------|---------------------|
| Laboratory sample ID | Client sample ID          | Method: Compound                                  | CAS Number | LOR                               | Unit  | Original Result | Duplicate Result | RPD (%) | Recovery Limits (%) |
| EP080/071: Total Rec | overable Hydrocarbons - N | IEPM 2013 Fractions (QC Lot: 2036439) - continued |            |                                   |       |                 |                  |         |                     |
| ES1833803-001        | Anonymous                 | EP071: >C10 - C16 Fraction                        |            | 50                                | mg/kg | <50             | <50              | 0.00    | No Limit            |
| EP080/071: Total Rec | overable Hydrocarbons - N | IEPM 2013 Fractions (QC Lot: 2037822)             |            |                                   |       |                 |                  |         |                     |
| ES1834013-004        | Anonymous                 | EP080: C6 - C10 Fraction                          | C6_C10     | 10                                | mg/kg | <10             | <10              | 0.00    | No Limit            |
| EP080: BTEXN (QC     | Lot: 2037822)             |   |            |                                   |       |                 |                  |         |                     |
| ES1834013-004        | Anonymous                 | EP080: Benzene                                    | 71-43-2    | 0.2                               | mg/kg | <0.2            | <0.2             | 0.00    | No Limit            |
|                      |                           | EP080: Toluene                                    | 108-88-3   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                           | EP080: Ethylbenzene                               | 100-41-4   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                           | EP080: meta- & para-Xylene                        | 108-38-3   | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                           |   | 106-42-3   |                                   |       |                 |                  |         |                     |
|                      |                           | EP080: ortho-Xylene                               | 95-47-6    | 0.5                               | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                           | EP080: Naphthalene                                | 91-20-3    | 1                                 | mg/kg | <1              | <1               | 0.00    | No Limit            |



## Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

| Sub-Matrix: SOIL                               |                |      |       | Method Blank (MB) | Laboratory Control Spike (LCS) Report |                    |          |            |
|--|----------------|------|-------|-------------------|---------------------------------------|--------------------|----------|------------|
|  |                |      |       | Report            | Spike                                 | Spike Recovery (%) | Recovery | Limits (%) |
| Method: Compound                               | CAS Number     | LOR  | Unit  | Result            | Concentration                         | LCS                | Low      | High       |
| EG005T: Total Metals by ICP-AES (QCLot: 204022 | :0)            |      |       |                   |                                       |                    |          |            |
| EG005T: Arsenic                                | 7440-38-2      | 5    | mg/kg | <5                | 21.7 mg/kg                            | 102                | 86       | 126        |
| EG005T: Cadmium                                | 7440-43-9      | 1    | mg/kg | <1                | 4.64 mg/kg                            | 101                | 83       | 113        |
| EG005T: Chromium                               | 7440-47-3      | 2    | mg/kg | <2                | 43.9 mg/kg                            | 93.5               | 76       | 128        |
| EG005T: Copper                                 | 7440-50-8      | 5    | mg/kg | <5                | 32 mg/kg                              | 100                | 86       | 120        |
| EG005T: Lead                                   | 7439-92-1      | 5    | mg/kg | <5                | 40 mg/kg                              | 103                | 80       | 114        |
| EG005T: Nickel                                 | 7440-02-0      | 2    | mg/kg | <2                | 55 mg/kg                              | 105                | 87       | 123        |
| EG005T: Zinc                                   | 7440-66-6      | 5    | mg/kg | <5                | 60.8 mg/kg                            | 107                | 80       | 122        |
| EG035T: Total Recoverable Mercury by FIMS (QC  | CLot: 2040221) |      |       |                   |                                       |                    |          |            |
| EG035T: Mercury                                | 7439-97-6      | 0.1  | mg/kg | <0.1              | 2.57 mg/kg                            | 75.1               | 70       | 105        |
| EP066: Polychlorinated Biphenyls (PCB) (QCLot: | 2036442)       |      |       |                   |                                       |                    |          |            |
| EP066: Total Polychlorinated biphenyls         |                | 0.1  | mg/kg | <0.1              | 1 mg/kg                               | 103                | 62       | 126        |
| EP068A: Organochlorine Pesticides (OC) (QCLot: | 2036441)       |      |       |                   |                                       |                    |          |            |
| EP068: alpha-BHC                               | 319-84-6       | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 89.1               | 69       | 113        |
| EP068: Hexachlorobenzene (HCB)                 | 118-74-1       | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 91.8               | 65       | 117        |
| EP068: beta-BHC                                | 319-85-7       | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 99.1               | 67       | 119        |
| EP068: gamma-BHC                               | 58-89-9        | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 88.3               | 68       | 116        |
| EP068: delta-BHC                               | 319-86-8       | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 96.0               | 65       | 117        |
| EP068: Heptachlor                              | 76-44-8        | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 83.1               | 67       | 115        |
| EP068: Aldrin                                  | 309-00-2       | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 93.5               | 69       | 115        |
| EP068: Heptachlor epoxide                      | 1024-57-3      | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 94.3               | 62       | 118        |
| EP068: trans-Chlordane                         | 5103-74-2      | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 104                | 63       | 117        |
| EP068: alpha-Endosulfan                        | 959-98-8       | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 93.0               | 66       | 116        |
| EP068: cis-Chlordane                           | 5103-71-9      | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 93.9               | 64       | 116        |
| EP068: Dieldrin                                | 60-57-1        | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 94.7               | 66       | 116        |
| EP068: 4.4`-DDE                                | 72-55-9        | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 105                | 67       | 115        |
| EP068: Endrin                                  | 72-20-8        | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 97.8               | 67       | 123        |
| EP068: beta-Endosulfan                         | 33213-65-9     | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 99.9               | 69       | 115        |
| EP068: 4.4`-DDD                                | 72-54-8        | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 100.0              | 69       | 121        |
| EP068: Endrin aldehyde                         | 7421-93-4      | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 85.5               | 56       | 120        |
| EP068: Endosulfan sulfate                      | 1031-07-8      | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 104                | 62       | 124        |
| EP068: 4.4`-DDT                                | 50-29-3        | 0.2  | mg/kg | <0.2              | 0.5 mg/kg                             | 88.4               | 66       | 120        |
| EP068: Endrin ketone                           | 53494-70-5     | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 96.8               | 64       | 122        |
| EP068: Methoxychlor                            | 72-43-5        | 0.2  | mg/kg | <0.2              | 0.5 mg/kg                             | 79.8               | 54       | 130        |
| EP068B: Organophosphorus Pesticides (OP) (QC   | Lot: 2036441)  |      |       |                   |                                       |                    |          |            |

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|------------|------------------------------------|
| Work Order | : ES1833866                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : 80818157 Kyeemagh Infants School |



| Sub-Matrix: SOIL                              |                        |      |       | Method Blank (MB) | Laboratory Control Spike (LCS) Report |                    |          |            |
|---|------------------------|------|-------|-------------------|---------------------------------------|--------------------|----------|------------|
|   |                        |      |       | Report            | Spike                                 | Spike Recovery (%) | Recovery | Limits (%) |
| Method: Compound                              | CAS Number             | LOR  | Unit  | Result            | Concentration                         | LCS                | Low      | High       |
| EP068B: Organophosphorus Pesticides (OP) (QCL | ot: 2036441) - continu | ed   |       |                   |                                       |                    |          |            |
| EP068: Dichlorvos                             | 62-73-7                | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 83.7               | 59       | 119        |
| EP068: Demeton-S-methyl                       | 919-86-8               | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 86.7               | 62       | 128        |
| EP068: Monocrotophos                          | 6923-22-4              | 0.2  | mg/kg | <0.2              | 0.5 mg/kg                             | 108                | 54       | 126        |
| EP068: Dimethoate                             | 60-51-5                | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 97.1               | 67       | 119        |
| EP068: Diazinon                               | 333-41-5               | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 87.7               | 70       | 120        |
| EP068: Chlorpyrifos-methyl                    | 5598-13-0              | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 87.4               | 72       | 120        |
| EP068: Parathion-methyl                       | 298-00-0               | 0.2  | mg/kg | <0.2              | 0.5 mg/kg                             | 82.8               | 68       | 120        |
| EP068: Malathion                              | 121-75-5               | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 77.4               | 68       | 122        |
| EP068: Fenthion                               | 55-38-9                | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 92.6               | 69       | 117        |
| EP068: Chlorpyrifos                           | 2921-88-2              | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 97.1               | 76       | 118        |
| EP068: Parathion                              | 56-38-2                | 0.2  | mg/kg | <0.2              | 0.5 mg/kg                             | 94.2               | 64       | 122        |
| EP068: Pirimphos-ethyl                        | 23505-41-1             | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 86.4               | 70       | 116        |
| EP068: Chlorfenvinphos                        | 470-90-6               | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 86.7               | 69       | 121        |
| EP068: Bromophos-ethyl                        | 4824-78-6              | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 94.6               | 66       | 118        |
| EP068: Fenamiphos                             | 22224-92-6             | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 95.4               | 68       | 124        |
| EP068: Prothiofos                             | 34643-46-4             | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 94.2               | 62       | 112        |
| EP068: Ethion                                 | 563-12-2               | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 93.2               | 68       | 120        |
| EP068: Carbophenothion                        | 786-19-6               | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 95.3               | 65       | 127        |
| EP068: Azinphos Methyl                        | 86-50-0                | 0.05 | mg/kg | <0.05             | 0.5 mg/kg                             | 64.4               | 41       | 123        |
| EP074A: Monocyclic Aromatic Hydrocarbons (QCL | .ot: 2037823)          |      |       |                   |                                       |                    |          |            |
| EP074: Styrene                                | 100-42-5               | 0.5  | mg/kg | <0.5              | 1 mg/kg                               | 87.5               | 67       | 113        |
| EP074: Isopropylbenzene                       | 98-82-8                | 0.5  | mg/kg | <0.5              | 1 mg/kg                               | 84.0               | 65       | 117        |
| EP074: n-Propylbenzene                        | 103-65-1               | 0.5  | mg/kg | <0.5              | 1 mg/kg                               | 83.3               | 66       | 122        |
| EP074: 1.3.5-Trimethylbenzene                 | 108-67-8               | 0.5  | mg/kg | <0.5              | 1 mg/kg                               | 83.7               | 68       | 118        |
| EP074: sec-Butylbenzene                       | 135-98-8               | 0.5  | mg/kg | <0.5              | 1 mg/kg                               | 82.6               | 69       | 119        |
| EP074: 1.2.4-Trimethylbenzene                 | 95-63-6                | 0.5  | mg/kg | <0.5              | 1 mg/kg                               | 84.1               | 69       | 117        |
| EP074: tert-Butylbenzene                      | 98-06-6                | 0.5  | mg/kg | <0.5              | 1 mg/kg                               | 82.9               | 69       | 115        |
| EP074: p-Isopropyltoluene                     | 99-87-6                | 0.5  | mg/kg | <0.5              | 1 mg/kg                               | 84.4               | 66       | 118        |
| EP074: n-Butylbenzene                         | 104-51-8               | 0.5  | mg/kg | <0.5              | 1 mg/kg                               | 84.4               | 59       | 125        |
| EP074B: Oxygenated Compounds (QCLot: 2037823  | 3)                     |      |       |                   |                                       |                    |          |            |
| EP074: Vinyl Acetate                          | 108-05-4               | 5    | mg/kg | <5                | 10 mg/kg                              | 58.1               | 30       | 156        |
| EP074: 2-Butanone (MEK)                       | 78-93-3                | 5    | mg/kg | <5                | 10 mg/kg                              | 81.9               | 58       | 136        |
| EP074: 4-Methyl-2-pentanone (MIBK)            | 108-10-1               | 5    | mg/kg | <5                | 10 mg/kg                              | 82.7               | 62       | 132        |
| EP074: 2-Hexanone (MBK)                       | 591-78-6               | 5    | mg/kg | <5                | 10 mg/kg                              | 78.4               | 54       | 136        |
| EP074C: Sulfonated Compounds (QCLot: 2037823) |                        |      |       |                   |                                       |                    |          |            |
| EP074: Carbon disulfide                       | 75-15-0                | 0.5  | mg/kg | <0.5              | 1 mg/kg                               | 81.0               | 54       | 126        |
| EP074D: Fumigants (QCLot: 2037823)            |                        |      |       |                   |                                       |                    |          |            |
| EP074: 2.2-Dichloropropane                    | 594-20-7               | 0.5  | mg/kg | <0.5              | 1 mg/kg                               | 85.7               | 60       | 126        |
| · · ·   | I                      |      |       | 1                 |                                       | 1                  |          | 1          |

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| Work Order | : ES1833866                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : 80818157 Kyeemagh Infants School |



| Sub-Matrix: SOIL                               |              |     |       | Method Blank (MB) | Laboratory Control Spike (LCS) Report |                    |          |            |
|--|--------------|-----|-------|-------------------|---------------------------------------|--------------------|----------|------------|
|  |              |     |       | Report            | Spike                                 | Spike Recovery (%) | Recovery | Limits (%) |
| Method: Compound                               | CAS Number   | LOR | Unit  | Result            | Concentration                         | LCS                | Low      | High       |
| EP074D: Fumigants (QCLot: 2037823) - continued |              |     |       |                   |                                       |                    |          |            |
| EP074: 1.2-Dichloropropane                     | 78-87-5      | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 82.1               | 68       | 124        |
| EP074: cis-1.3-Dichloropropylene               | 10061-01-5   | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 85.6               | 51       | 119        |
| EP074: trans-1.3-Dichloropropylene             | 10061-02-6   | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 85.3               | 52       | 114        |
| EP074: 1.2-Dibromoethane (EDB)                 | 106-93-4     | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 84.5               | 63       | 115        |
| EP074E: Halogenated Aliphatic Compounds (QCLo  | ot: 2037823) |     |       |                   |                                       |                    |          |            |
| EP074: Dichlorodifluoromethane                 | 75-71-8      | 5   | mg/kg | <5                | 10 mg/kg                              | 35.5               | 30       | 148        |
| EP074: Chloromethane                           | 74-87-3      | 5   | mg/kg | <5                | 10 mg/kg                              | 65.1               | 41       | 141        |
| EP074: Vinyl chloride                          | 75-01-4      | 5   | mg/kg | <5                | 10 mg/kg                              | 68.8               | 43       | 147        |
| EP074: Bromomethane                            | 74-83-9      | 5   | mg/kg | <5                | 10 mg/kg                              | 68.5               | 47       | 141        |
| EP074: Chloroethane                            | 75-00-3      | 5   | mg/kg | <5                | 10 mg/kg                              | 78.0               | 49       | 143        |
| EP074: Trichlorofluoromethane                  | 75-69-4      | 5   | mg/kg | <5                | 10 mg/kg                              | 79.5               | 49       | 135        |
| EP074: 1.1-Dichloroethene                      | 75-35-4      | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 84.3               | 54       | 126        |
| EP074: Iodomethane                             | 74-88-4      | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 102                | 43       | 129        |
| EP074: trans-1.2-Dichloroethene                | 156-60-5     | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 88.6               | 64       | 120        |
| EP074: 1.1-Dichloroethane                      | 75-34-3      | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 86.9               | 67       | 125        |
| EP074: cis-1.2-Dichloroethene                  | 156-59-2     | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 87.4               | 69       | 121        |
| EP074: 1.1.1-Trichloroethane                   | 71-55-6      | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 86.0               | 65       | 117        |
| EP074: 1.1-Dichloropropylene                   | 563-58-6     | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 85.8               | 65       | 123        |
| EP074: Carbon Tetrachloride                    | 56-23-5      | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 82.9               | 59       | 125        |
| EP074: 1.2-Dichloroethane                      | 107-06-2     | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 83.1               | 65       | 125        |
| EP074: Trichloroethene                         | 79-01-6      | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 82.7               | 70       | 118        |
| EP074: Dibromomethane                          | 74-95-3      | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 82.0               | 68       | 118        |
| EP074: 1.1.2-Trichloroethane                   | 79-00-5      | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 85.9               | 64       | 126        |
| EP074: 1.3-Dichloropropane                     | 142-28-9     | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 88.3               | 68       | 122        |
| EP074: Tetrachloroethene                       | 127-18-4     | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 93.2               | 67       | 143        |
| EP074: 1.1.1.2-Tetrachloroethane               | 630-20-6     | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 82.8               | 62       | 122        |
| EP074: trans-1.4-Dichloro-2-butene             | 110-57-6     | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 84.2               | 54       | 128        |
| EP074: cis-1.4-Dichloro-2-butene               | 1476-11-5    | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 83.8               | 55       | 129        |
| EP074: 1.1.2.2-Tetrachloroethane               | 79-34-5      | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 80.2               | 65       | 121        |
| EP074: 1.2.3-Trichloropropane                  | 96-18-4      | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 86.4               | 61       | 125        |
| EP074: Pentachloroethane                       | 76-01-7      | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 74.4               | 20       | 134        |
| EP074: 1.2-Dibromo-3-chloropropane             | 96-12-8      | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 80.1               | 53       | 129        |
| EP074: Hexachlorobutadiene                     | 87-68-3      | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 82.0               | 50       | 128        |
| EP074F: Halogenated Aromatic Compounds (QCLo   | ot: 2037823) |     |       |                   |                                       |                    |          |            |
| EP074: Chlorobenzene                           | 108-90-7     | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 86.9               | 68       | 116        |
| EP074: Bromobenzene                            | 108-86-1     | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 84.7               | 70       | 114        |
| EP074: 2-Chlorotoluene                         | 95-49-8      | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 82.4               | 68       | 122        |
| EP074: 4-Chlorotoluene                         | 106-43-4     | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 85.2               | 67       | 123        |
| EP074: 1.3-Dichlorobenzene                     | 541-73-1     | 0.5 | mg/kg | <0.5              | 1 mg/kg                               | 81.8               | 70       | 116        |

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| Work Order | ES1833866                          |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : 80818157 Kyeemagh Infants School |



| Sub-Matrix: SOIL                                   |                      |              |       | Method Blank (MB) | Laboratory Control Spike (LCS) Report |                    |          |            |
|--|----------------------|--------------|-------|-------------------|---------------------------------------|--------------------|----------|------------|
|  |                      |              |       | Report            | Spike                                 | Spike Recovery (%) | Recovery | Limits (%) |
| Method: Compound                                   | CAS Number           | LOR          | Unit  | Result            | Concentration                         | LCS                | Low      | High       |
| EP074F: Halogenated Aromatic Compounds (QCLot: 2   | 2037823) - continued | k            |       |                   |                                       |                    |          |            |
| EP074: 1.4-Dichlorobenzene                         | 106-46-7             | 0.5          | mg/kg | <0.5              | 1 mg/kg                               | 82.1               | 67       | 117        |
| EP074: 1.2-Dichlorobenzene                         | 95-50-1              | 0.5          | mg/kg | <0.5              | 1 mg/kg                               | 79.9               | 70       | 114        |
| EP074: 1.2.4-Trichlorobenzene                      | 120-82-1             | 0.5          | mg/kg | <0.5              | 1 mg/kg                               | 83.4               | 48       | 122        |
| EP074: 1.2.3-Trichlorobenzene                      | 87-61-6              | 0.5          | mg/kg | <0.5              | 1 mg/kg                               | 80.7               | 52       | 122        |
| EP074G: Trihalomethanes (QCLot: 2037823)           |                      |              |       |                   |                                       |                    |          |            |
| EP074: Chloroform                                  | 67-66-3              | 0.5          | mg/kg | <0.5              | 1 mg/kg                               | 86.0               | 66       | 124        |
| EP074: Bromodichloromethane                        | 75-27-4              | 0.5          | mg/kg | <0.5              | 1 mg/kg                               | 82.0               | 61       | 121        |
| EP074: Dibromochloromethane                        | 124-48-1             | 0.5          | mg/kg | <0.5              | 1 mg/kg                               | 86.4               | 63       | 121        |
| EP074: Bromoform                                   | 75-25-2              | 0.5          | mg/kg | <0.5              | 1 mg/kg                               | 82.7               | 60       | 126        |
| EP074H: Naphthalene (QCLot: 2037823)               |                      |              |       |                   |                                       |                    |          |            |
| EP074: Naphthalene                                 | 91-20-3              | 1            | mg/kg | <1                | 1 mg/kg                               | 82.4               | 67       | 129        |
| EP075(SIM)B: Polynuclear Aromatic Hydrocarbons(Q   | CLot: 2036440)       |              |       |                   |                                       |                    |          |            |
| EP075(SIM): Naphthalene                            | 91-20-3              | 0.5          | mg/kg | <0.5              | 6 mg/kg                               | 93.7               | 77       | 125        |
| EP075(SIM): Acenaphthylene                         | 208-96-8             | 0.5          | mg/kg | <0.5              | 6 mg/kg                               | 94.8               | 72       | 124        |
| EP075(SIM): Acenaphthene                           | 83-32-9              | 0.5          | mg/kg | <0.5              | 6 mg/kg                               | 90.8               | 73       | 127        |
| EP075(SIM): Fluorene                               | 86-73-7              | 0.5          | mg/kg | <0.5              | 6 mg/kg                               | 90.4               | 72       | 126        |
| EP075(SIM): Phenanthrene                           | 85-01-8              | 0.5          | mg/kg | <0.5              | 6 mg/kg                               | 90.7               | 75       | 127        |
| EP075(SIM): Anthracene                             | 120-12-7             | 0.5          | mg/kg | <0.5              | 6 mg/kg                               | 88.5               | 77       | 127        |
| EP075(SIM): Fluoranthene                           | 206-44-0             | 0.5          | mg/kg | <0.5              | 6 mg/kg                               | 93.6               | 73       | 127        |
| EP075(SIM): Pyrene                                 | 129-00-0             | 0.5          | mg/kg | <0.5              | 6 mg/kg                               | 91.3               | 74       | 128        |
| EP075(SIM): Benz(a)anthracene                      | 56-55-3              | 0.5          | mg/kg | <0.5              | 6 mg/kg                               | 90.6               | 69       | 123        |
| EP075(SIM): Chrysene                               | 218-01-9             | 0.5          | mg/kg | <0.5              | 6 mg/kg                               | 88.6               | 75       | 127        |
| EP075(SIM): Benzo(b+j)fluoranthene                 | 205-99-2             | 0.5          | mg/kg | <0.5              | 6 mg/kg                               | 96.8               | 68       | 116        |
|  | 205-82-3             |              |       |                   |                                       |                    |          |            |
| EP075(SIM): Benzo(k)fluoranthene                   | 207-08-9             | 0.5          | mg/kg | <0.5              | 6 mg/kg                               | 97.4               | 74       | 126        |
| EP075(SIM): Benzo(a)pyrene                         | 50-32-8              | 0.5          | mg/kg | <0.5              | 6 mg/kg                               | 91.3               | 70       | 126        |
| EP075(SIM): Indeno(1.2.3.cd)pyrene                 | 193-39-5             | 0.5          | mg/kg | <0.5              | 6 mg/kg                               | 93.8               | 61       | 121        |
| EP075(SIM): Dibenz(a.h)anthracene                  | 53-70-3              | 0.5          | mg/kg | <0.5              | 6 mg/kg                               | 92.7               | 62       | 118        |
| EP075(SIM): Benzo(g.h.i)perylene                   | 191-24-2             | 0.5          | mg/kg | <0.5              | 6 mg/kg                               | 95.3               | 63       | 121        |
| EP080/071: Total Petroleum Hydrocarbons (QCLot: 20 | 36439)               |              |       |                   |                                       |                    |          |            |
| EP071: C10 - C14 Fraction                          |                      | 50           | mg/kg | <50               | 300 mg/kg                             | 112                | 75       | 129        |
| EP071: C15 - C28 Fraction                          |                      | 100          | mg/kg | <100              | 450 mg/kg                             | 110                | 77       | 131        |
| EP071: C29 - C36 Fraction                          |                      | 100          | mg/kg | <100              | 300 mg/kg                             | 100                | 71       | 129        |
| EP080/071: Total Petroleum Hydrocarbons (QCLot: 20 | 37822)               |              |       |                   |                                       |                    |          |            |
| EP080: C6 - C9 Fraction                            |                      | 10           | mg/kg | <10               | 26 mg/kg                              | 80.7               | 68       | 128        |
| EP080/071: Total Recoverable Hydrocarbons - NEPM 2 | 013 Fractions (QCL   | ot: 2036439) |       |                   |                                       |                    |          |            |
| EP071: >C10 - C16 Fraction                         |                      | 50           | mg/kg | <50               | 375 mg/kg                             | 112                | 77       | 125        |
| EP071: >C16 - C34 Fraction                         |                      | 100          | mg/kg | <100              | 525 mg/kg                             | 106                | 74       | 138        |



| Sub-Matrix: SOIL                                | Method Blank (MB)      | Laboratory Control Spike (LCS) Report |          |        |                    |          |            |      |
|---|------------------------|---------------------------------------|----------|--------|--------------------|----------|------------|------|
|   |                        |                                       | Report   | Spike  | Spike Recovery (%) | Recovery | Limits (%) |      |
| Method: Compound                                | CAS Number             | LOR                                   | Unit     | Result | Concentration      | LCS      | Low        | High |
| EP080/071: Total Recoverable Hydrocarbons - NEF | PM 2013 Fractions (QCI | Lot: 2036439) - co                    | ontinued |        |                    |          |            |      |
| EP071: >C34 - C40 Fraction                      |                        | 100                                   | mg/kg    | <100   | 225 mg/kg          | 89.4     | 63         | 131  |
| EP080/071: Total Recoverable Hydrocarbons - NEF | PM 2013 Fractions (QCI | Lot: 2037822)                         |          |        |                    |          |            |      |
| EP080: C6 - C10 Fraction                        | C6_C10                 | 10                                    | mg/kg    | <10    | 31 mg/kg           | 82.2     | 68         | 128  |
| EP080: BTEXN (QCLot: 2037822)                   |                        |                                       |          |        |                    |          |            |      |
| EP080: Benzene                                  | 71-43-2                | 0.2                                   | mg/kg    | <0.2   | 1 mg/kg            | 86.8     | 62         | 116  |
| EP080: Toluene                                  | 108-88-3               | 0.5                                   | mg/kg    | <0.5   | 1 mg/kg            | 85.6     | 67         | 121  |
| EP080: Ethylbenzene                             | 100-41-4               | 0.5                                   | mg/kg    | <0.5   | 1 mg/kg            | 85.5     | 65         | 117  |
| EP080: meta- & para-Xylene                      | 108-38-3               | 0.5                                   | mg/kg    | <0.5   | 2 mg/kg            | 85.7     | 66         | 118  |
|   | 106-42-3               |                                       |          |        |                    |          |            |      |
| EP080: ortho-Xylene                             | 95-47-6                | 0.5                                   | mg/kg    | <0.5   | 1 mg/kg            | 85.3     | 68         | 120  |
| EP080: Naphthalene                              | 91-20-3                | 1                                     | mg/kg    | <1     | 1 mg/kg            | 83.3     | 63         | 119  |

## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

| Sub-Matrix: SOIL     |  |  |               | M         | atrix Spike (MS) Report |            |           |
|----------------------|--|--|---------------|-----------|-------------------------|------------|-----------|
|                      |  |  |               | Spike     | SpikeRecovery(%)        | Recovery L | imits (%) |
| Laboratory sample ID | Client sample ID                           | Method: Compound                       | Concentration | MS        | Low                     | High       |           |
| EG005T: Total Met    | als by ICP-AES (QCLot: 2040220)            |  |               |           |                         |            |           |
| ES1833803-001        | Anonymous                                  | EG005T: Arsenic                        | 7440-38-2     | 50 mg/kg  | 94.8                    | 70         | 130       |
|                      |  | EG005T: Cadmium                        | 7440-43-9     | 50 mg/kg  | 101                     | 70         | 130       |
|                      |  | EG005T: Chromium                       | 7440-47-3     | 50 mg/kg  | 97.6                    | 70         | 130       |
|                      |  | EG005T: Copper                         | 7440-50-8     | 250 mg/kg | 115                     | 70         | 130       |
|                      |  | EG005T: Lead                           | 7439-92-1     | 250 mg/kg | 80.9                    | 70         | 130       |
|                      |  | EG005T: Nickel                         | 7440-02-0     | 50 mg/kg  | 101                     | 70         | 130       |
|                      |  | EG005T: Zinc                           | 7440-66-6     | 250 mg/kg | 130                     | 70         | 130       |
| EG035T: Total Red    | coverable Mercury by FIMS (QCLot: 2040221) |  |               |           |                         |            |           |
| ES1833803-001        | Anonymous                                  | EG035T: Mercury                        | 7439-97-6     | 5 mg/kg   | 93.3                    | 70         | 130       |
| EP066: Polychlorir   | ated Biphenyls (PCB) (QCLot: 2036442)      |  |               |           |                         |            |           |
| ES1833803-001        | Anonymous                                  | EP066: Total Polychlorinated biphenyls |               | 1 mg/kg   | 103                     | 70         | 130       |
| EP068A: Organoch     | lorine Pesticides (OC) (QCLot: 2036441)    |  |               |           |                         |            |           |
| ES1833803-001        | Anonymous                                  | EP068: gamma-BHC                       | 58-89-9       | 0.5 mg/kg | 93.6                    | 70         | 130       |
|                      |  | EP068: Heptachlor                      | 76-44-8       | 0.5 mg/kg | 104                     | 70         | 130       |
|                      |  | EP068: Aldrin                          | 309-00-2      | 0.5 mg/kg | 90.6                    | 70         | 130       |
|                      |  | EP068: Dieldrin                        | 60-57-1       | 0.5 mg/kg | 100                     | 70         | 130       |
|                      |  | EP068: Endrin                          | 72-20-8       | 2 mg/kg   | 92.7                    | 70         | 130       |

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|------------|----------------------------------|
| Work Order | ES1833866                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD       |
| Project    | 80818157 Kyeemagh Infants School |



| Sub-Matrix: SOIL        |   | Matrix Spike (MS) Report   |            |               |                  |            |            |
|-------------------------|---|----------------------------|------------|---------------|------------------|------------|------------|
|                         |   |                            |            | Spike         | SpikeRecovery(%) | Recovery I | Limits (%) |
| Laboratory sample ID    | Client sample ID                                | Method: Compound           | CAS Number | Concentration | MS               | Low        | High       |
| EP068A: Organoc         | hlorine Pesticides (OC) (QCLot: 2036441) - cont | inued                      |            |               |                  |            |            |
| ES1833803-001           | Anonymous                                       | EP068: 4.4`-DDT            | 50-29-3    | 2 mg/kg       | 99.0             | 70         | 130        |
| EP068B: Organop         | hosphorus Pesticides (OP) (QCLot: 2036441)      |                            |            |               |                  |            |            |
| ES1833803-001           | Anonymous                                       | EP068: Diazinon            | 333-41-5   | 0.5 mg/kg     | 102              | 70         | 130        |
|                         |   | EP068: Chlorpyrifos-methyl | 5598-13-0  | 0.5 mg/kg     | 98.0             | 70         | 130        |
|                         |   | EP068: Pirimphos-ethyl     | 23505-41-1 | 0.5 mg/kg     | 98.5             | 70         | 130        |
|                         |   | EP068: Bromophos-ethyl     | 4824-78-6  | 0.5 mg/kg     | 95.8             | 70         | 130        |
|                         |   | EP068: Prothiofos          | 34643-46-4 | 0.5 mg/kg     | 93.8             | 70         | 130        |
| EP074E: Halogena        | ated Aliphatic Compounds (QCLot: 2037823)       |                            |            |               |                  |            |            |
| ES1834013-004           | Anonymous                                       | EP074: 1.1-Dichloroethene  | 75-35-4    | 2.5 mg/kg     | 92.6             | 70         | 130        |
|                         |   | EP074: Trichloroethene     | 79-01-6    | 2.5 mg/kg     | 86.2             | 70         | 130        |
| EP074F: Halogena        | ted Aromatic Compounds (QCLot: 2037823)         |                            |            |               |                  |            |            |
| ES1834013-004           | Anonymous                                       | EP074: Chlorobenzene       | 108-90-7   | 2.5 mg/kg     | 89.9             | 70         | 130        |
| EP075(SIM)B: Poly       | vnuclear Aromatic Hydrocarbons (QCLot: 20364    | 40)                        |            |               |                  |            |            |
| ES1833803-001 Aponymous |   | EP075/SIM): Acenaphthene   | 83-32-9    | 10 ma/ka      | 91.5             | 70         | 130        |
|                         |   | EP075(SIM): Pyrene         | 129-00-0   | 10 mg/kg      | 102              | 70         | 130        |
|                         |   |                            |            |               |                  |            |            |
|                         | Petroleum Hydrocarbons (QCLot: 2036439)         |                            |            | 500           | 400              | 70         | 407        |
| ES1833803-001           | Anonymous                                       | EP071: C10 - C14 Fraction  |            | 523 mg/kg     | 103              | 73         | 137        |
|                         |   | EP071: C15 - C28 Fraction  |            | 2319 mg/kg    | 110              | 53         | 131        |
|                         |   | EP071: C29 - C36 Fraction  |            | 1714 mg/kg    | 114              | 52         | 132        |
| EP080/071: Total F      | Petroleum Hydrocarbons (QCLot: 2037822)         |                            |            |               |                  |            |            |
| ES1834013-004           | Anonymous                                       | EP080: C6 - C9 Fraction    |            | 32.5 mg/kg    | 91.8             | 70         | 130        |
| EP080/071: Total F      | Recoverable Hydrocarbons - NEPM 2013 Fraction   | s (QCLot: 2036439)         |            |               |                  |            |            |
| ES1833803-001           | Anonymous                                       | EP071: >C10 - C16 Fraction |            | 860 mg/kg     | 102              | 73         | 137        |
|                         |   | EP071: >C16 - C34 Fraction |            | 3223 mg/kg    | 110              | 53         | 131        |
|                         |   | EP071: >C34 - C40 Fraction |            | 1058 mg/kg    | 111              | 52         | 132        |
| EP080/071: Total F      | Recoverable Hydrocarbons - NEPM 2013 Fraction   | s (QCLot: 2037822)         |            |               |                  |            |            |
| ES1834013-004           | Anonymous                                       | EP080: C6 - C10 Fraction   | C6_C10     | 37.5 mg/kg    | 94.1             | 70         | 130        |
| EP080: BTEXN (Q         | CLot: 2037822)                                  |                            |            |               |                  |            |            |
| ES1834013-004           | Anonymous                                       | EP080: Benzene             | 71-43-2    | 2.5 mg/kg     | 90.1             | 70         | 130        |
|                         |   | EP080: Toluene             | 108-88-3   | 2.5 mg/kg     | 92.8             | 70         | 130        |
|                         |   | EP080: Ethylbenzene        | 100-41-4   | 2.5 mg/kg     | 92.2             | 70         | 130        |
|                         |   | EP080: meta- & para-Xylene | 108-38-3   | 2.5 mg/kg     | 91.1             | 70         | 130        |
|                         |   |                            | 106-42-3   |               |                  |            |            |
|                         |   | EP080: ortho-Xylene        | 95-47-6    | 2.5 mg/kg     | 92.7             | 70         | 130        |
|                         |   | EP080: Naphthalene         | 91-20-3    | 2.5 mg/kg     | 91.0             | 70         | 130        |



| QA/QC Compliance Assessment to assist with Quality Review |                                    |                         |                                 |  |  |
|---|------------------------------------|-------------------------|---------------------------------|--|--|
| Work Order  | : ES1833866                        | Page                    | : 1 of 6                        |  |  |
| Client  | : CARDNO (NSW/ACT) PTY LTD         | Laboratory              | : Environmental Division Sydney |  |  |
| Contact   | MR BEN WITHNALL                    | Telephone               | : +61-2-8784 8555               |  |  |
| Project   | : 80818157 Kyeemagh Infants School | Date Samples Received   | : 13-Nov-2018                   |  |  |
| Site  | :                                  | Issue Date              | : 19-Nov-2018                   |  |  |
| Sampler   | : Joel Griffiths                   | No. of samples received | : 1                             |  |  |
| Order number  | :                                  | No. of samples analysed | : 1                             |  |  |

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

# **Summary of Outliers**

### **Outliers : Quality Control Samples**

This report highlights outliers flagged in the Quality Control (QC) Report.

- <u>NO</u> Method Blank value outliers occur.
- <u>NO</u> Duplicate outliers occur.
- <u>NO</u> Laboratory Control outliers occur.
- <u>NO</u> Matrix Spike outliers occur.
- For all regular sample matrices, <u>NO</u> surrogate recovery outliers occur.

### **Outliers : Analysis Holding Time Compliance**

• NO Analysis Holding Time Outliers exist.

### **Outliers : Frequency of Quality Control Samples**

• <u>NO</u> Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for <u>VOC in soils</u> vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

| Matrix: SOIL                                |                                   |                |                    | Evaluation | n: × = Holding time | breach ; 🗸 = Withi | n holding time. |
|---|-----------------------------------|----------------|--------------------|------------|---------------------|--------------------|-----------------|
| Method                                      | Sample Date Extraction / Preparat |                |                    |            | Analysis            |                    |                 |
| Container / Client Sample ID(s)             |                                   | Date extracted | Due for extraction | Evaluation | Date analysed       | Due for analysis   | Evaluation      |
| EA055: Moisture Content (Dried @ 105-110°C) |                                   |                |                    |            |                     |                    |                 |
| Soil Glass Jar - Unpreserved (EA055)        |                                   |                |                    |            |                     |                    |                 |
| QA200                                       | 10-Nov-2018                       |                |                    |            | 15-Nov-2018         | 24-Nov-2018        | ✓               |
| EG005T: Total Metals by ICP-AES             |                                   |                |                    |            |                     |                    |                 |
| Soil Glass Jar - Unpreserved (EG005T)       |                                   |                |                    |            |                     |                    |                 |
| QA200                                       | 10-Nov-2018                       | 16-Nov-2018    | 09-May-2019        |            | 16-Nov-2018         | 09-May-2019        | ✓               |
| EG035T: Total Recoverable Mercury by FIMS   |                                   |                |                    |            |                     |                    |                 |
| Soil Glass Jar - Unpreserved (EG035T)       |                                   |                |                    |            |                     |                    |                 |
| QA200                                       | 10-Nov-2018                       | 16-Nov-2018    | 08-Dec-2018        | ~          | 16-Nov-2018         | 08-Dec-2018        | ✓               |
| EP066: Polychlorinated Biphenyls (PCB)      | -                                 |                |                    |            |                     |                    |                 |
| Soil Glass Jar - Unpreserved (EP066)        | 40 Nov 0040                       | 45 Nov 0040    | 24 Nov 2019        | ,          | 40 Nov 0040         | 25 Dec 2019        |                 |
| QA200                                       | 10-NOV-2018                       | 15-NOV-2018    | 24-INOV-2018       | ~          | 16-NOV-2018         | 25-Dec-2016        | ✓               |
| EP068A: Organochlorine Pesticides (OC)      |                                   |                |                    |            |                     |                    |                 |
| Soil Glass Jar - Unpreserved (EP068)        | 10-Nov-2018                       | 15-Nov-2018    | 24-Nov-2018        | /          | 16-Nov-2018         | 25-Dec-2018        |                 |
|   | 10-110-2010                       | 13-1107-2010   | 24 100 2010        | ~          | 10-1107-2010        | 20 000 2010        | •               |
| EP068B: Organophosphorus Pesticides (OP)    | 1                                 |                |                    |            |                     |                    |                 |
| Soil Glass Jar - Unpreserved (EP068)        | 10-Nov-2018                       | 15-Nov-2018    | 24-Nov-2018        |            | 16-Nov-2018         | 25-Dec-2018        |                 |
|   |                                   |                |                    |            |                     |                    |                 |
| EPU/4A: Monocyclic Aromatic Hydrocarbons    |                                   |                |                    |            |                     |                    |                 |
| QA200                                       | 10-Nov-2018                       | 15-Nov-2018    | 17-Nov-2018        | 1          | 15-Nov-2018         | 17-Nov-2018        | 1               |
| EP074P: Oxygenated Compounds                |                                   |                |                    |            |                     |                    |                 |
| Soil Glass Jar - Unpreserved (EP074)        |                                   |                |                    |            |                     |                    |                 |
| QA200                                       | 10-Nov-2018                       | 15-Nov-2018    | 17-Nov-2018        | 1          | 15-Nov-2018         | 17-Nov-2018        | ✓               |
| EP074C: Sulfonated Compounds                |                                   |                |                    |            |                     |                    |                 |
| Soil Glass Jar - Unpreserved (EP074)        |                                   |                |                    |            |                     |                    |                 |
| QA200                                       | 10-Nov-2018                       | 15-Nov-2018    | 17-Nov-2018        | ✓          | 15-Nov-2018         | 17-Nov-2018        | ✓               |
| EP074D: Fumigants                           |                                   |                |                    |            |                     |                    |                 |
| Soil Glass Jar - Unpreserved (EP074)        |                                   |                |                    |            |                     |                    |                 |
| QA200                                       | 10-Nov-2018                       | 15-Nov-2018    | 17-Nov-2018        | ✓          | 15-Nov-2018         | 17-Nov-2018        | ✓               |



| Matrix: SOIL  |             |                |                        | Evaluation | : × = Holding time | breach ; 🗸 = Withi | n holding time. |
|---|-------------|----------------|------------------------|------------|--------------------|--------------------|-----------------|
| Method  | Sample Date | Ex             | traction / Preparation |            |                    | Analysis           |                 |
| Container / Client Sample ID(s)                                 |             | Date extracted | Due for extraction     | Evaluation | Date analysed      | Due for analysis   | Evaluation      |
| EP074E: Halogenated Aliphatic Compounds                         |             |                |                        |            |                    |                    |                 |
| Soil Glass Jar - Unpreserved (EP074)<br>QA200                   | 10-Nov-2018 | 15-Nov-2018    | 17-Nov-2018            | 1          | 15-Nov-2018        | 17-Nov-2018        | ~               |
| EP074F: Halogenated Aromatic Compounds                          |             |                |                        |            |                    |                    |                 |
| Soil Glass Jar - Unpreserved (EP074)<br>QA200                   | 10-Nov-2018 | 15-Nov-2018    | 17-Nov-2018            | 1          | 15-Nov-2018        | 17-Nov-2018        | ✓               |
| EP074G: Trihalomethanes   |             |                |                        |            |                    |                    |                 |
| Soil Glass Jar - Unpreserved (EP074)<br>QA200                   | 10-Nov-2018 | 15-Nov-2018    | 17-Nov-2018            | 1          | 15-Nov-2018        | 17-Nov-2018        | ✓               |
| EP074H: Naphthalene   |             |                |                        |            |                    |                    |                 |
| Soil Glass Jar - Unpreserved (EP074)<br>QA200                   | 10-Nov-2018 | 15-Nov-2018    | 17-Nov-2018            | 1          | 15-Nov-2018        | 17-Nov-2018        | ~               |
| EP075(SIM)B: Polynuclear Aromatic Hydrocarbons                  |             |                |                        |            |                    |                    |                 |
| Soil Glass Jar - Unpreserved (EP075(SIM))<br>QA200              | 10-Nov-2018 | 15-Nov-2018    | 24-Nov-2018            | ~          | 16-Nov-2018        | 25-Dec-2018        | ~               |
| EP080/071: Total Petroleum Hydrocarbons                         |             |                |                        |            |                    |                    |                 |
| Soil Glass Jar - Unpreserved (EP080)<br>QA200                   | 10-Nov-2018 | 15-Nov-2018    | 24-Nov-2018            | 1          | 15-Nov-2018        | 24-Nov-2018        | ✓               |
| Soil Glass Jar - Unpreserved (EP071)<br>QA200                   | 10-Nov-2018 | 15-Nov-2018    | 24-Nov-2018            | ~          | 16-Nov-2018        | 25-Dec-2018        | ~               |
| EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions |             |                |                        |            |                    |                    |                 |
| Soil Glass Jar - Unpreserved (EP080)<br>QA200                   | 10-Nov-2018 | 15-Nov-2018    | 24-Nov-2018            | 1          | 15-Nov-2018        | 24-Nov-2018        | ~               |
| Soil Glass Jar - Unpreserved (EP071)<br>QA200                   | 10-Nov-2018 | 15-Nov-2018    | 24-Nov-2018            | 1          | 16-Nov-2018        | 25-Dec-2018        | ~               |
| EP080: BTEXN  |             |                |                        |            |                    |                    |                 |
| Soil Glass Jar - Unpreserved (EP080)<br>QA200                   | 10-Nov-2018 | 15-Nov-2018    | 24-Nov-2018            | 1          | 15-Nov-2018        | 24-Nov-2018        | ~               |



# **Quality Control Parameter Frequency Compliance**

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

| Matrix: SOIL                     |            |    |         | Evaluatio | n: × = Quality Co | ntrol frequency | not within specification ; $\checkmark$ = Quality Control frequency within specification. |
|----------------------------------|------------|----|---------|-----------|-------------------|-----------------|---|
| Quality Control Sample Type      |            | Co | ount    |           | Rate (%)          |                 | Quality Control Specification   |
| Analytical Methods               | Method     | 00 | Reaular | Actual    | Expected          | Evaluation      |   |
| Laboratory Duplicates (DUP)      |            |    |         |           |                   |                 |   |
| Moisture Content                 | EA055      | 2  | 19      | 10.53     | 10.00             | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| PAH/Phenols (SIM)                | EP075(SIM) | 1  | 9       | 11.11     | 10.00             | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Pesticides by GCMS               | EP068      | 1  | 6       | 16.67     | 10.00             | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Polychlorinated Biphenyls (PCB)  | EP066      | 1  | 3       | 33.33     | 10.00             | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Total Mercury by FIMS            | EG035T     | 2  | 20      | 10.00     | 10.00             | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Total Metals by ICP-AES          | EG005T     | 2  | 20      | 10.00     | 10.00             | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| TRH - Semivolatile Fraction      | EP071      | 1  | 10      | 10.00     | 10.00             | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| TRH Volatiles/BTEX               | EP080      | 1  | 7       | 14.29     | 10.00             | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Volatile Organic Compounds       | EP074      | 2  | 17      | 11.76     | 10.00             | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Laboratory Control Samples (LCS) |            |    |         |           |                   |                 |   |
| PAH/Phenols (SIM)                | EP075(SIM) | 1  | 9       | 11.11     | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Pesticides by GCMS               | EP068      | 1  | 6       | 16.67     | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Polychlorinated Biphenyls (PCB)  | EP066      | 1  | 3       | 33.33     | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Total Mercury by FIMS            | EG035T     | 1  | 20      | 5.00      | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Total Metals by ICP-AES          | EG005T     | 1  | 20      | 5.00      | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| TRH - Semivolatile Fraction      | EP071      | 1  | 10      | 10.00     | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| TRH Volatiles/BTEX               | EP080      | 1  | 7       | 14.29     | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Volatile Organic Compounds       | EP074      | 1  | 17      | 5.88      | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Method Blanks (MB)               |            |    |         |           |                   |                 |   |
| PAH/Phenols (SIM)                | EP075(SIM) | 1  | 9       | 11.11     | 5.00              | 1               | NEPM 2013 B3 & ALS QC Standard  |
| Pesticides by GCMS               | EP068      | 1  | 6       | 16.67     | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Polychlorinated Biphenyls (PCB)  | EP066      | 1  | 3       | 33.33     | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Total Mercury by FIMS            | EG035T     | 1  | 20      | 5.00      | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Total Metals by ICP-AES          | EG005T     | 1  | 20      | 5.00      | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| TRH - Semivolatile Fraction      | EP071      | 1  | 10      | 10.00     | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| TRH Volatiles/BTEX               | EP080      | 1  | 7       | 14.29     | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Volatile Organic Compounds       | EP074      | 1  | 17      | 5.88      | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Matrix Spikes (MS)               |            |    |         |           |                   |                 |   |
| PAH/Phenols (SIM)                | EP075(SIM) | 1  | 9       | 11.11     | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Pesticides by GCMS               | EP068      | 1  | 6       | 16.67     | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Polychlorinated Biphenyls (PCB)  | EP066      | 1  | 3       | 33.33     | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Total Mercury by FIMS            | EG035T     | 1  | 20      | 5.00      | 5.00              | ~               | NEPM 2013 B3 & ALS QC Standard  |
| Total Metals by ICP-AES          | EG005T     | 1  | 20      | 5.00      | 5.00              | ~               | NEPM 2013 B3 & ALS QC Standard  |
| TRH - Semivolatile Fraction      | EP071      | 1  | 10      | 10.00     | 5.00              | $\checkmark$    | NEPM 2013 B3 & ALS QC Standard  |
| TRH Volatiles/BTEX               | EP080      | 1  | 7       | 14.29     | 5.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Volatile Organic Compounds       | EP074      | 1  | 17      | 5.88      | 5.00              | ~               | NEPM 2013 B3 & ALS QC Standard  |



# **Brief Method Summaries**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods   | Method     | Matrix | Method Descriptions   |
|--|------------|--------|---|
| Moisture Content   | EA055      | SOIL   | In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).  |
| Total Metals by ICP-AES                                    | EG005T     | SOIL   | In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)  |
| Total Mercury by FIMS                                      | EG035T     | SOIL   | In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3) |
| Polychlorinated Biphenyls (PCB)                            | EP066      | SOIL   | In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)  |
| Pesticides by GCMS   | EP068      | SOIL   | In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)   |
| TRH - Semivolatile Fraction                                | EP071      | SOIL   | In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.   |
| Volatile Organic Compounds                                 | EP074      | SOIL   | In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS.<br>Quantification is by comparison against an established 5 point calibration curve. This method is compliant with<br>NEPM (2013) Schedule B(3) (Method 501)   |
| PAH/Phenols (SIM)  | EP075(SIM) | SOIL   | In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)   |
| TRH Volatiles/BTEX   | EP080      | SOIL   | In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.   |
| Preparation Methods  | Method     | Matrix | Method Descriptions   |
| Hot Block Digest for metals in soils sediments and sludges | EN69       | SOIL   | In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)   |
| Methanolic Extraction of Soils for Purge and Trap          | ORG16      | SOIL   | In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.   |

| Page       | 5 6 of 6                           |
|------------|------------------------------------|
| Work Order | : ES1833866                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : 80818157 Kyeemagh Infants School |



| Preparation Methods          | Method | Matrix | Method Descriptions   |
|------------------------------|--------|--------|---|
| Tumbler Extraction of Solids | ORG17  | SOIL   | In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 |
|                              |        |        | DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the   |
|                              |        |        | desired volume for analysis.  |

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| 6                        | <b>Cardno</b> <sup>®</sup><br>Shaping the Fature |                     |                          | U<br>U          | HAIN O           | F CU                         | STOD               | Y AN                          | D ANA                    | ILYSÍ                        | S RE  | QUES        | •<br>  • |                |                              | 10     |
|--------------------------|--|---------------------|--------------------------|-----------------|------------------|------------------------------|--------------------|-------------------------------|--------------------------|------------------------------|---|-------------|----------|----------------|------------------------------|--------|
| Contact Person:          | Ben Withnal                                      |                     |                          |                 |                  | roject Name:                 |                    | Kyee                          | imegh Infants S          | school                       |   |             |          |                |                              |        |
| Telephone Number:        | 9495 8188  |                     |                          |                 |                  | roject Numbr                 | ü                  | 8081                          | 8157                     |                              |   |             |          |                |                              |        |
| Attemative Contect:      | Joel Griffiths                                   |                     |                          |                 |                  | O No.:                       | İ                  |                               |                          |                              |   |             |          |                | <b>.</b>                     |        |
| Telephone Number:        | 9496 7873  |                     |                          |                 |                  | roject Specif                | ic Guote No.       |                               |                          |                              | F   | \$1029CAR_1 |          |                |                              |        |
| Sampler:                 | Jael Griffiths                                   |                     |                          |                 |                  | ate results ru               | iquired:           | Stan.                         | dard TAT                 |                              |   |             |          |                |                              |        |
| Email Address (results a | and involce):                                    | ben.withnall@cardno | com.au; Joel.griffiths@. | cardno.com.au   |                  | eport formet                 |                    |                               |                          |                              |   | Electronic  |          |                |                              |        |
| Address: Level 9 - The F | crum, 203 Pacific Highway, St Lee                | merds, New South We | kes 2065                 |                 |                  |                              |                    |                               |                          |                              |   |             |          |                |                              |        |
|                          |  | Sample Information  |                          |                 |                  |                              |                    |                               |                          | Analysis                     | Required  |             |          |                | Comin                        | ents   |
| Cardno Sample ID         | Laboratory Sample ID                             | No. Containers      | Preservation             | Date<br>sampled | Matrix           | . * 1:58 elsteM\HA9\NX3T8\HA | 16+1 - OCP/OPP/PCB | (b)<br>H Field Screen (pH and | (Xơth)<br>(%wiw) satseda | eonesdA \ eonesen 9 kolseda/ | iuite 21*1: NEPIN Screen for<br>ioil Classification | югр         | ,        |                | · · ·                        |        |
| 00200                    |  | 6                   | e0                       | 10/11/2018      | Soil             |                              |                    |                               | d<br>d                   | √                            |   |             | ╀        |                | Imental Division             |        |
| 2010                     |  | 4                   |                          |                 | 5                | ┢                            | ;                  |                               |                          |                              |   |             |          | Svdnev         |                              |        |
|                          |  |                     |                          |                 |                  |                              |                    | +-                            |                          | -                            |   |             |          | Wark           | Order Reference              |        |
|                          |  |                     |                          |                 |                  |                              |                    |                               |                          |                              |   |             |          | у<br>Ш         | 1833866                      | [      |
|                          |  |                     |                          |                 |                  |                              |                    |                               |                          |                              |   |             |          |                |                              |        |
|                          |  |                     |                          |                 |                  |                              |                    |                               |                          |                              |   |             |          |                |                              |        |
|                          |  |                     |                          |                 |                  |                              |                    |                               |                          |                              |   |             | +        |                |                              | _ [    |
| :                        |  |                     |                          |                 |                  | -                            |                    |                               | 1                        |                              |   |             | +        |                |                              |        |
|                          |  |                     |                          |                 |                  |                              |                    |                               |                          |                              |   |             | +        |                |                              |        |
|                          |  |                     |                          |                 |                  |                              | -                  | +                             |                          |                              |   |             |          |                |                              |        |
|                          |  |                     | Ī                        |                 |                  | <br>                         | -                  |                               | +                        |                              |   |             | ╞        |                | 61-2-8784 <b>8</b> 555       |        |
|                          |  |                     |                          |                 |                  | <u> </u>                     |                    |                               |                          |                              |   |             |          |                | _                            |        |
|                          |  |                     |                          |                 |                  |                              |                    |                               |                          |                              |   |             |          |                |                              |        |
|                          |  |                     |                          |                 |                  | +                            |                    | -                             |                          | _                            |   |             |          |                |                              |        |
|                          |  |                     |                          |                 | 1                |                              | +                  |                               |                          |                              |   |             | -        | -              |                              |        |
| Relinquished by:         | Joel Griffiths                                   | Received by:        |                          | <u>~</u>        | telinquished by: |                              |                    |                               | Receiv                   | ed by:                       |   |             |          | Reinquished D  |                              |        |
| (name / company)         | Carchio  | (name / company)    |                          |                 | name / company   |                              |                    |                               | (name i                  | ( company)                   |   |             |          | (name / compar | ()<br>()                     |        |
| Date & Time:             | 12/11/18: 12:00                                  | Date & Time:        | . :                      | <u> </u>        | late & Time:     |                              |                    |                               | Date &                   | Time:                        |   |             |          | Date & Time:   |                              | ۵.     |
| Signature:               | Ðſ   | Signature:          |                          | <u>ਯ</u>        | ignature:        |                              |                    |                               | Signatu                  | lrte:                        |   |             |          | Signature:     | ł                            |        |
| Received by:             |  | Relinquished by:    |                          |                 | eceived by:      |                              |                    |                               | Relinqu                  | ilshed by:                   |   |             |          | Lab use:       | •                            |        |
| (name / company)         |  | (neme / company)    |                          | <u>.</u>        | зате / сопрялу   |                              |                    |                               | (name )                  | (company)                    |   |             |          | Samples Recei  | red: Cool or Ambient (circle | one)   |
| Date & Time:             |  | Date & Time:        |                          | q               | late & Time:     |                              |                    |                               | Date &                   | Time:                        |   |             |          | Temperature R  | kelved at: (If applic        | (able) |
| Slondtire                |  | Simatur'e:          |                          | <u></u>         | ionature:        |                              |                    |                               | ,<br>Signatu             | ile:                         |   |             |          | Transported by | : Hand delivered / courier   |        |



mgt



## Certificate of Analysis

Cardno (NSW/ACT) Pty Ltd Level 9, 203 Pacific Highway St Leonards NSW 2065



NATA Accredited Accreditation Number 1261 Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

### Attention:

Ben Withnall

| Report        |
|---------------|
| Project name  |
| Project ID    |
| Received Date |

628416-S KYEEMAGH INFANTS SCHOOL 80818157 Nov 19, 2018

|  | 1    | 1     |              |              | 1            | 1            |
|--|------|-------|--------------|--------------|--------------|--------------|
| Client Sample ID                                 |      |       | TP13_0.1     | TP14_0.7     | TP15_0.1     | TP15_0.6     |
| Sample Matrix                                    |      |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.                        |      |       | S18-No24227  | S18-No24230  | S18-No24231  | S18-No24232  |
| Date Sampled                                     |      |       | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 |
| Test/Reference                                   | LOR  | Unit  |              |              |              |              |
| Total Recoverable Hydrocarbons - 1999 NEPM Fract | ions |       |              |              |              |              |
| TRH C6-C9  | 20   | mg/kg | < 20         | < 20         | < 20         | < 20         |
| TRH C10-C14                                      | 20   | mg/kg | < 20         | < 20         | < 20         | < 20         |
| TRH C15-C28                                      | 50   | mg/kg | 70           | < 50         | < 50         | < 50         |
| TRH C29-C36                                      | 50   | mg/kg | 290          | < 50         | < 50         | < 50         |
| TRH C10-36 (Total)                               | 50   | mg/kg | 360          | < 50         | < 50         | < 50         |
| BTEX   |      |       |              |              |              |              |
| Benzene  | 0.1  | mg/kg | < 0.1        | -            | < 0.1        | -            |
| Toluene  | 0.1  | mg/kg | < 0.1        | -            | < 0.1        | -            |
| Ethylbenzene                                     | 0.1  | mg/kg | < 0.1        | -            | < 0.1        | -            |
| m&p-Xylenes                                      | 0.2  | mg/kg | < 0.2        | -            | < 0.2        | -            |
| o-Xylene   | 0.1  | mg/kg | < 0.1        | -            | < 0.1        | -            |
| Xylenes - Total                                  | 0.3  | mg/kg | < 0.3        | -            | < 0.3        | -            |
| 4-Bromofluorobenzene (surr.)                     | 1    | %     | 141          | -            | 55           | -            |
| Volatile Organics                                |      |       |              |              |              |              |
| 1.1-Dichloroethane                               | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 1.1-Dichloroethene                               | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 1.1.1-Trichloroethane                            | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 1.1.1.2-Tetrachloroethane                        | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 1.1.2-Trichloroethane                            | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 1.1.2.2-Tetrachloroethane                        | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 1.2-Dibromoethane                                | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 1.2-Dichlorobenzene                              | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 1.2-Dichloroethane                               | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 1.2-Dichloropropane                              | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 1.2.3-Trichloropropane                           | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 1.2.4-Trimethylbenzene                           | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 1.3-Dichlorobenzene                              | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 1.3-Dichloropropane                              | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 1.3.5-Trimethylbenzene                           | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 1.4-Dichlorobenzene                              | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 2-Butanone (MEK)                                 | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 2-Propanone (Acetone)                            | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 4-Chlorotoluene                                  | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 4-Methyl-2-pentanone (MIBK)                      | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Allyl chloride                                   | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |


| Client Sample ID                                  |      |       | TP13_0.1     | TP14_0.7     | TP15_0.1     | TP15_0.6     |
|---|------|-------|--------------|--------------|--------------|--------------|
| Sample Matrix                                     |      |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.                         |      |       | S18-No24227  | S18-No24230  | S18-No24231  | S18-No24232  |
| Date Sampled                                      |      |       | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 |
| Test/Poference                                    |      | Linit |              | 100 11, 2010 | 100 11, 2010 | 100 11, 2010 |
| Velatile Organics                                 | LOR  | Unit  |              |              |              |              |
|   | 0.4  |       | .0.1         | .0.1         |              | .0.1         |
| Benzene   | 0.1  | mg/kg | < 0.1        | < 0.1        | -            | < 0.1        |
| Bromobenzene                                      | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Bromocritoromethane                               | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Bromodichioromethane                              | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Bromonothana                                      | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Bromomethane                                      | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Carbon disulide                                   | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Carbon Tetrachioride                              | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Chlorobenzene                                     | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Chloroferra                                       | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Chloroform  | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
|   | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
|   | 0.5  | mg/кg | < 0.5        | < 0.5        | -            | < 0.5        |
|   | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Dibromochloromethane                              | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Dibromomethane                                    | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
|   | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Ethylbenzene                                      | 0.1  | mg/kg | < 0.1        | < 0.1        | -            | < 0.1        |
| Iodomethane                                       | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Isopropyl benzene (Cumene)                        | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| m&p-Xylenes                                       | 0.2  | mg/kg | < 0.2        | < 0.2        | -            | < 0.2        |
| Methylene Chloride                                | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| o-Xylene  | 0.1  | mg/kg | < 0.1        | < 0.1        | -            | < 0.1        |
| Styrene   | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
|   | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Toluene   | 0.1  | mg/kg | < 0.1        | < 0.1        | -            | < 0.1        |
| trans-1.2-Dichloroethene                          | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| trans-1.3-Dichloropropene                         | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Trichloroethene                                   | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Trichlorofluoromethane                            | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
|   | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Xylenes - Total                                   | 0.3  | mg/kg | < 0.3        | < 0.3        | -            | < 0.3        |
| Total MAH*  | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Vic EPA IWRG 621 CHC (Total)*                     | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| Vic EPA IWRG 621 Other CHC (Total)*               | 0.5  | mg/kg | < 0.5        | < 0.5        | -            | < 0.5        |
| 4-Bromofluorobenzene (surr.)                      | 1    | %     | 141          | 126          | -            | 144          |
| Toluene-d8 (surr.)                                | 1    | %     | 116          | 115          | -            | 130          |
| Total Recoverable Hydrocarbons - 2013 NEPM Fract  | ions | 1     |              |              |              |              |
| Naphthalene <sup>N02</sup>                        | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| TRH C6-C10  | 20   | mg/kg | < 20         | < 20         | < 20         | < 20         |
| TRH C6-C10 less BTEX (F1) <sup>N04</sup>          | 20   | mg/kg | < 20         | < 20         | < 20         | < 20         |
| TRH >C10-C16                                      | 50   | mg/kg | < 50         | < 50         | < 50         | < 50         |
| TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup> | 50   | mg/kg | < 50         | < 50         | < 50         | < 50         |
| TRH >C16-C34                                      | 100  | mg/kg | 270          | < 100        | < 100        | < 100        |
| TRH >C34-C40                                      | 100  | mg/kg | 240          | < 100        | < 100        | < 100        |
| TRH >C10-C40 (total)*                             | 100  | mg/kg | 510          | < 100        | < 100        | < 100        |



| Client Sample ID                      |      |       | TP13_0.1     | TP14_0.7     | TP15_0.1     | TP15_0.6     |
|---------------------------------------|------|-------|--------------|--------------|--------------|--------------|
| Sample Matrix                         |      |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.             |      |       | S18-No24227  | S18-No24230  | S18-No24231  | S18-No24232  |
| Date Sampled                          |      |       | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 |
| Test/Reference                        | LOR  | Unit  |              |              |              |              |
| Polycyclic Aromatic Hydrocarbons      |      |       |              |              |              |              |
| Benzo(a)pyrene TEQ (lower bound) *    | 0.5  | ma/ka | < 0.5        | < 0.5        | 0.9          | < 0.5        |
| Benzo(a)pyrene TEQ (medium bound) *   | 0.5  | mg/kg | 0.6          | 0.6          | 1.2          | 0.6          |
| Benzo(a)pyrene TEQ (upper bound) *    | 0.5  | mg/kg | 1.2          | 1.2          | 1.5          | 1.2          |
| Acenaphthene                          | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Acenaphthylene                        | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Anthracene                            | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benz(a)anthracene                     | 0.5  | mg/kg | < 0.5        | < 0.5        | 1.1          | < 0.5        |
| Benzo(a)pyrene                        | 0.5  | mg/kg | < 0.5        | < 0.5        | 0.7          | < 0.5        |
| Benzo(b&j)fluoranthene <sup>N07</sup> | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(g.h.i)perylene                  | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(k)fluoranthene                  | 0.5  | mg/kg | < 0.5        | < 0.5        | 0.7          | < 0.5        |
| Chrysene                              | 0.5  | mg/kg | < 0.5        | < 0.5        | 1.0          | < 0.5        |
| Dibenz(a.h)anthracene                 | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Fluoranthene                          | 0.5  | mg/kg | < 0.5        | < 0.5        | 1.3          | < 0.5        |
| Fluorene                              | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Indeno(1.2.3-cd)pyrene                | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Naphthalene                           | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Phenanthrene                          | 0.5  | mg/kg | < 0.5        | < 0.5        | 0.8          | < 0.5        |
| Pyrene                                | 0.5  | mg/kg | < 0.5        | < 0.5        | 1.3          | < 0.5        |
| Total PAH*                            | 0.5  | mg/kg | < 0.5        | < 0.5        | 6.9          | < 0.5        |
| 2-Fluorobiphenyl (surr.)              | 1    | %     | 101          | 111          | 136          | 59           |
| p-Terphenyl-d14 (surr.)               | 1    | %     | 98           | 72           | 83           | 58           |
| Organochlorine Pesticides             |      |       |              |              |              |              |
| Chlordanes - Total                    | 0.1  | mg/kg | < 0.1        | -            | -            | < 0.1        |
| 4.4'-DDD                              | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| 4.4'-DDE                              | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| 4.4'-DDT                              | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| a-BHC                                 | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| Aldrin                                | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| b-BHC                                 | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| d-BHC                                 | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| Dieldrin                              | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| Endosulfan I                          | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| Endosulfan II                         | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| Endosulfan sulphate                   | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| Endrin                                | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| Endrin aldehyde                       | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| Endrin ketone                         | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| g-BHC (Lindane)                       | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| Heptachlor                            | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| Heptachlor epoxide                    | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| Hexachlorobenzene                     | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| Methoxychlor                          | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| Toxaphene                             | 1    | mg/kg | < 1          | -            | -            | < 1          |
| Aldrin and Dieldrin (Total)*          | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| DDT + DDE + DDD (Total)*              | 0.05 | mg/kg | < 0.05       | -            | -            | < 0.05       |
| Vic EPA IWRG 621 OCP (Total)*         | 0.1  | mg/kg | < 0.1        | -            | -            | < 0.1        |
| Vic EPA IWRG 621 Other OCP (Total)*   | 0.1  | mg/kg | < 0.1        | -            | -            | < 0.1        |
| Dibutylchlorendate (surr.)            | 1    | %     | 85           | -            | -            | 73           |
| Tetrachloro-m-xylene (surr.)          | 1    | %     | 70           | -            | -            | 89           |



| Client Sample ID             |     |       | TP13_0.1     | TP14_0.7     | TP15_0.1     | TP15_0.6     |
|------------------------------|-----|-------|--------------|--------------|--------------|--------------|
| Sample Matrix                |     |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.    |     |       | S18-No24227  | S18-No24230  | S18-No24231  | S18-No24232  |
| Date Sampled                 |     |       | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 |
| Test/Reference               | LOR | Unit  |              |              |              |              |
| Organophosphorus Pesticides  |     |       |              |              |              |              |
| Azinphos-methyl              | 0.2 | ma/ka | < 0.2        | -            | -            | < 0.2        |
| Bolstar                      | 0.2 | ma/ka | < 0.2        | -            | -            | < 0.2        |
| Chlorfenvinphos              | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Chlorpyrifos                 | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Chlorpyrifos-methyl          | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Coumaphos                    | 2   | mg/kg | < 2          | -            | -            | < 2          |
| Demeton-S                    | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Demeton-O                    | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Diazinon                     | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Dichlorvos                   | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Dimethoate                   | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Disulfoton                   | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| EPN                          | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Ethion                       | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Ethoprop                     | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Ethyl parathion              | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Fenitrothion                 | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Fensulfothion                | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Fenthion                     | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Malathion                    | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Merphos                      | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Methyl parathion             | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Mevinphos                    | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Monocrotophos                | 2   | mg/kg | < 2          | -            | -            | < 2          |
| Naled                        | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Omethoate                    | 2   | mg/kg | < 2          | -            | -            | < 2          |
| Phorate                      | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Pirimiphos-methyl            | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Pyrazophos                   | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Ronnel                       | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Terbufos                     | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Tetrachlorvinphos            | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Tokuthion                    | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Trichloronate                | 0.2 | mg/kg | < 0.2        | -            | -            | < 0.2        |
| Triphenylphosphate (surr.)   | 1   | %     | 97           | -            | -            | 53           |
| Polychlorinated Biphenyls    |     |       |              |              |              |              |
| Aroclor-1016                 | 0.1 | mg/kg | < 0.1        | -            | -            | < 0.1        |
| Aroclor-1221                 | 0.1 | mg/kg | < 0.1        | -            | -            | < 0.1        |
| Aroclor-1232                 | 0.1 | mg/kg | < 0.1        | -            | -            | < 0.1        |
| Aroclor-1242                 | 0.1 | mg/kg | < 0.1        | -            | -            | < 0.1        |
| Aroclor-1248                 | 0.1 | mg/kg | < 0.1        | -            | -            | < 0.1        |
| Aroclor-1254                 | 0.1 | mg/kg | < 0.1        | -            | -            | < 0.1        |
| Aroclor-1260                 | 0.1 | mg/kg | < 0.1        | -            | -            | < 0.1        |
| Total PCB*                   | 0.1 | mg/kg | < 0.1        | -            | -            | < 0.1        |
| Dibutylchlorendate (surr.)   | 1   | %     | 85           | -            | -            | 73           |
| Tetrachloro-m-xylene (surr.) | 1   | %     | 70           | -            | -            | 89           |



| Client Sample ID<br>Sample Matrix<br>Eurofins   mgt Sample No.<br>Date Sampled |     |       | TP13_0.1<br>Soil<br>S18-No24227<br>Nov 17, 2018 | TP14_0.7<br>Soil<br>S18-No24230<br>Nov 17, 2018 | TP15_0.1<br>Soil<br>S18-No24231<br>Nov 17, 2018 | TP15_0.6<br>Soil<br>S18-No24232<br>Nov 17, 2018 |
|--|-----|-------|---|---|---|---|
| Test/Reference   | LOR | Unit  |   |   |   |   |
| Heavy Metals   |     |       |   |   |   |   |
| Arsenic  | 2   | mg/kg | < 2   | < 2   | < 2   | < 2   |
| Cadmium  | 0.4 | mg/kg | < 0.4   | < 0.4   | < 0.4   | < 0.4   |
| Chromium   | 5   | mg/kg | 32  | < 5   | < 5   | < 5   |
| Copper   | 5   | mg/kg | 12  | < 5   | 16  | < 5   |
| Lead   | 5   | mg/kg | 11  | < 5   | 65  | < 5   |
| Mercury  | 0.1 | mg/kg | < 0.1   | < 0.1   | 0.1   | < 0.1   |
| Nickel   | 5   | mg/kg | 30  | < 5   | < 5   | < 5   |
| Zinc   | 5   | mg/kg | 40  | < 5   | 43  | 120   |
| % Moisture   | 1   | %     | 3.4   | 1.9   | 2.7   | 2.8   |

| Client Sample ID                                 |      |       | TP16_0.1     | TP16_0.8     | TP17_0.5     | TP18_0.1     |
|--|------|-------|--------------|--------------|--------------|--------------|
| Sample Matrix                                    |      |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.                        |      |       | S18-No24233  | S18-No24234  | S18-No24236  | S18-No24237  |
| Date Sampled                                     |      |       | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 |
| Test/Reference                                   | LOR  | Unit  |              |              |              |              |
| Total Recoverable Hydrocarbons - 1999 NEPM Fract | ions |       |              |              |              |              |
| TRH C6-C9  | 20   | mg/kg | < 20         | < 20         | < 20         | < 20         |
| TRH C10-C14                                      | 20   | mg/kg | < 20         | < 20         | < 20         | < 20         |
| TRH C15-C28                                      | 50   | mg/kg | < 50         | < 50         | < 50         | < 50         |
| TRH C29-C36                                      | 50   | mg/kg | < 50         | < 50         | < 50         | < 50         |
| TRH C10-36 (Total)                               | 50   | mg/kg | < 50         | < 50         | < 50         | < 50         |
| BTEX   |      |       |              |              |              |              |
| Benzene  | 0.1  | mg/kg | < 0.1        | -            | -            | < 0.1        |
| Toluene  | 0.1  | mg/kg | < 0.1        | -            | -            | < 0.1        |
| Ethylbenzene                                     | 0.1  | mg/kg | < 0.1        | -            | -            | < 0.1        |
| m&p-Xylenes                                      | 0.2  | mg/kg | < 0.2        | -            | -            | < 0.2        |
| o-Xylene   | 0.1  | mg/kg | < 0.1        | -            | -            | < 0.1        |
| Xylenes - Total                                  | 0.3  | mg/kg | < 0.3        | -            | -            | < 0.3        |
| 4-Bromofluorobenzene (surr.)                     | 1    | %     | 51           | -            | -            | 57           |
| Volatile Organics                                |      |       |              |              |              |              |
| 1.1-Dichloroethane                               | 0.5  | mg/kg | -            | < 0.5        | < 0.5        | -            |
| 1.1-Dichloroethene                               | 0.5  | mg/kg | -            | < 0.5        | < 0.5        | -            |
| 1.1.1-Trichloroethane                            | 0.5  | mg/kg | -            | < 0.5        | < 0.5        | -            |
| 1.1.1.2-Tetrachloroethane                        | 0.5  | mg/kg | -            | < 0.5        | < 0.5        | -            |
| 1.1.2-Trichloroethane                            | 0.5  | mg/kg | -            | < 0.5        | < 0.5        | -            |
| 1.1.2.2-Tetrachloroethane                        | 0.5  | mg/kg | -            | < 0.5        | < 0.5        | -            |
| 1.2-Dibromoethane                                | 0.5  | mg/kg | -            | < 0.5        | < 0.5        | -            |
| 1.2-Dichlorobenzene                              | 0.5  | mg/kg | -            | < 0.5        | < 0.5        | -            |
| 1.2-Dichloroethane                               | 0.5  | mg/kg | -            | < 0.5        | < 0.5        | -            |
| 1.2-Dichloropropane                              | 0.5  | mg/kg | -            | < 0.5        | < 0.5        | -            |
| 1.2.3-Trichloropropane                           | 0.5  | mg/kg | -            | < 0.5        | < 0.5        | -            |
| 1.2.4-Trimethylbenzene                           | 0.5  | mg/kg | -            | < 0.5        | < 0.5        | -            |
| 1.3-Dichlorobenzene                              | 0.5  | mg/kg | -            | < 0.5        | < 0.5        | -            |
| 1.3-Dichloropropane                              | 0.5  | mg/kg | -            | < 0.5        | < 0.5        | -            |
| 1.3.5-Trimethylbenzene                           | 0.5  | mg/kg | -            | < 0.5        | < 0.5        | -            |
| 1.4-Dichlorobenzene                              | 0.5  | mg/kg | -            | < 0.5        | < 0.5        | -            |
| 2-Butanone (MEK)                                 | 0.5  | mg/kg | -            | < 0.5        | < 0.5        | -            |



| Sample Matrix   |             |
|---|-------------|
|   | oil         |
| Eurofins   mgt Sample No. S18-No24233 S18-No24234 S18-No24236 S1  | 18-No24237  |
| Date Sampled Nov 17, 2018 Nov 17, 2018 Nov 17, 2018 Nov 17, 2018 Nov 17, 2018   | ov 17, 2018 |
| Test/Reference  |             |
|   |             |
| 2-Propagone (Acetone)   |             |
| 4-Chlorotoluene 0.5 mg/kg - <0.5 <0.5   |             |
| 4-Oniololoidene 0.5 mg/kg - <0.5 <0.5   |             |
| 4-methyl-2-pentatione (mibit)         0.5         mg/kg         -         < 0.5         < 0.5           Allyl chloride         0.5         mg/kg         -         < 0.5  |             |
| Benzene 0.1 mg/kg - <0.1 <0.1   |             |
| Bromohenzene 0.5 mg/kg - <0.5 <0.5  |             |
| Bromochloromethane 0.5 mg/kg - <0.5 <0.5  | _           |
| Bromodichloromethane 0.5 mg/kg - <0.5 <0.5  |             |
| Bromoform 0.5 mg/kg - <0.5 <0.5   |             |
| Bromomethane 0.5 mg/kg - <0.5 <0.5  | _           |
| Disinificinant         0.5         mg/kg         -         < 0.5         < 0.5           Carbon disulfide         0.5         mg/kg         -         < 0.5               | _           |
| Carbon Tetrachloride 0.5 mg/kg - <0.5 <0.5  | _           |
|   | _           |
| Chloroothono  | -           |
| Chloroferm         0.5         mg/kg         -         < 0.5         < 0.5  | -           |
| Chloromethana   | -           |
| chioromethane 0.5 mg/kg - < 0.5 < 0.5   | -           |
| CIS-1.2-Dichloroptione         0.5         mg/kg         -         < 0.5         < 0.5           via 1 2 Dichloroptione         0.5         mg/kg         -         < 0.5 | -           |
| Cis-1.3-Dichloropropene 0.5 mg/kg - < 0.5 < 0.5   | -           |
| Dibromochioromethane 0.5 mg/kg - < 0.5 < 0.5  | -           |
| Dibromomethane 0.5 mg/kg - < 0.5 < 0.5  | -           |
| Dichlorodifluoromethane 0.5 mg/kg - < 0.5 < 0.5   | -           |
| Ethylbenzene 0.1 mg/kg - <0.1 <0.1  | -           |
| Iodomethane         0.5         mg/kg         -         < 0.5         < 0.5   | -           |
| Isopropyl benzene (Cumene) 0.5 mg/kg - <0.5 <0.5  | -           |
| m&p-Xylenes 0.2 mg/kg - <0.2 <0.2   | -           |
| Methylene Chloride 0.5 mg/kg - <0.5 <0.5  | -           |
| 0-Xylene 0.1 mg/kg - <0.1 <0.1  | -           |
| Styrene         0.5         mg/kg         -         < 0.5         < 0.5   | -           |
| Tetrachloroethene 0.5 mg/kg - < 0.5 < 0.5   | -           |
| Toluene         0.1         mg/kg         -         < 0.1         < 0.1   | -           |
| trans-1.2-Dichloroethene 0.5 mg/kg - < 0.5 < 0.5  | -           |
| trans-1.3-Dichloropropene 0.5 mg/kg - < 0.5 < 0.5   | -           |
| Trichloroethene         0.5         mg/kg         -         < 0.5         < 0.5   | -           |
| Trichlorofluoromethane 0.5 mg/kg - < 0.5 < 0.5  | -           |
| Vinyl chloride         0.5         mg/kg         -         < 0.5         < 0.5  | -           |
| Xylenes - Total         0.3         mg/kg         -         < 0.3         < 0.3   | -           |
| Total MAH*         0.5         mg/kg         -         < 0.5         < 0.5  | -           |
| Vic EPA IWRG 621 CHC (Total)*         0.5         mg/kg         -         < 0.5         < 0.5   | -           |
| Vic EPA IWRG 621 Other CHC (Total)*         0.5         mg/kg         -         < 0.5         < 0.5   | -           |
| 4-Bromofluorobenzene (surr.) 1 % - 137 136  | -           |
| Toluene-d8 (surr.)         1         %         -         118         113  | -           |
| Total Recoverable Hydrocarbons - 2013 NEPM Fractions  |             |
| Naphthalene <sup>N02</sup> 0.5         mg/kg         < 0.5         < 0.5  | < 0.5       |
| TRH C6-C10         20         mg/kg         < 20         < 20         < 20  | < 20        |
| TRH C6-C10 less BTEX (F1) <sup>N04</sup> 20         mg/kg         < 20         < 20         < 20  | < 20        |
| TRH >C10-C16 50 mg/kg < 50 < 50 < 50  | < 50        |
| TRH >C10-C16         less Naphthalene (F2) <sup>N01</sup> 50         mg/kg         < 50         < 50         < 50   | < 50        |
| TRH >C16-C34         100         mg/kg         < 100         < 100         < 100  | < 100       |
| TRH >C34-C40         100         mg/kg         < 100         < 100         < 100  | < 100       |
| TRH >C10-C40 (total)*         100         mg/kg         < 100         < 100         < 100   | < 100       |



| Sample Mairix         Soil   | Client Sample ID                      |      |       | TP16_0.1     | TP16_0.8     | TP17_0.5     | TP18_0.1     |
|--|---------------------------------------|------|-------|--------------|--------------|--------------|--------------|
| Euronia Ingl Sample No.         Site Account of the Nort 7, 2018         Site Nort 7, 2018         Nort 7,    | Sample Matrix                         |      |       | Soil         | Soil         | Soil         | Soil         |
| Date Sampled         LOR         Unit         Nov 17, 2018         Nov 17, 2018         Nov 17, 2018           Tasi/Relarance         LOR         Unit              Benzolspyreme TEQ (lewer bound)*         0.5         mg%g         0.6         0.6         0.6           Benzolspyreme TEQ (ingelum bound)*         0.5         mg%g         0.6         0.6         0.6           Benzolspyreme TEQ (ingelum bound)*         0.5         mg%g         0.6         0.6         0.6         0.6         0.6           Benzolspyreme TEQ (ingelum bound)*         0.5         mg%g         0.6         0.5         0.6         0.5         0.6         0.5         0.6         0.5         0.6         0.5         0.6         0.5         0.6         0.5         0.6         0.5         0.6         0.5         0.6         0.5         0.6         0.5         0.5         0.6         0.5 <t< td=""><td>Eurofins   mgt Sample No.</td><td></td><td></td><td>S18-No24233</td><td>S18-No24234</td><td>S18-No24236</td><td>S18-No24237</td></t<>  | Eurofins   mgt Sample No.             |      |       | S18-No24233  | S18-No24234  | S18-No24236  | S18-No24237  |
| TaskReimene         LOR         Unit         Vert         Vert           Palyspein Aromatic Hydrocarbo         0.5         mg/g         <0.5   | Date Sampled                          |      |       | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 |
| Polycyclic Aromalic Hydrocarbons         Image   | Test/Reference                        | LOR  | Unit  |              |              |              |              |
| Benzolajpyrene TED (lower bound)*         0.5         mg/kg         < 0.5         < < 0.5         < < 0.5         < < 0.5           Benzolajpyrene TEO (imper bound)*         0.5         mg/kg         1.2  | Polycyclic Aromatic Hydrocarbons      | 2011 | 0     |              |              |              |              |
| Benzolajpyrene TEO (medium bound)*         0.5         mg/kg         0.6         0.6         0.6         0.6           Benzolajpyrene TEO (upper bound)*         0.5         mg/kg         <0.5  | Benzo(a)pyrene TEQ (lower bound) *    | 0.5  | ma/ka | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Banzolajpyrene TEQ (upper bound)*         0.5         mg/kg         1.2         1.2         1.2         1.2         1.2           Acanaghthene         0.5         mg/kg         < 0.5   | Benzo(a)pyrene TEQ (medium bound) *   | 0.5  | ma/ka | 0.6          | 0.6          | 0.6          | 0.6          |
| Acenaphthene         0.5         mg/kg         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5   | Benzo(a)pyrene TEQ (upper bound) *    | 0.5  | ma/ka | 1.2          | 1.2          | 1.2          | 1.2          |
| Asenapshthylene         0.5         mg/kg         < 0.5         < 0.5         < 0.5         < 0.5           Anthracene         0.5         mg/kg         < 0.5   | Acenaphthene                          | 0.5  | ma/ka | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Anthracene         0.5         mg/kg         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5   | Acenaphthylene                        | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benz(a)prene         0.5         mg/tg         < 0.5         < 0.5         < 0.5         < 0.5           Benzo(b)()uroanthene <sup>MV</sup> 0.5         mg/tg         < 0.5  | Anthracene                            | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzolphymen         0.5         mg/tg         < 0.5         < 0.5         < 0.5         < 0.5           Benzolphymen         0.5         mg/tg         < 0.5  | Benz(a)anthracene                     | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(b8)/floranthane <sup>W7</sup> 0.5         mg/kg         < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5  | Benzo(a)pyrene                        | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(h)perviene         0.5         mg/kg         < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         < < 0.5         <   | Benzo(b&j)fluoranthene <sup>N07</sup> | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Benzo(Nluoranthene         0.5         mg/kg         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5   | Benzo(g.h.i)perylene                  | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Chrysene         0.5         mg/kg         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5 <t< td=""><td>Benzo(k)fluoranthene</td><td>0.5</td><td>mg/kg</td><td>&lt; 0.5</td><td>&lt; 0.5</td><td>&lt; 0.5</td><td>&lt; 0.5</td></t<>  | Benzo(k)fluoranthene                  | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Dibenz(a)hjanthracene         0.5         mg/kg         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5         <0.5   | Chrysene                              | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Fluoranthene         0.5         mg/kg         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5   | Dibenz(a.h)anthracene                 | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Fluorene         0.5         mg/kg         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5 <t< td=""><td>Fluoranthene</td><td>0.5</td><td>mg/kg</td><td>&lt; 0.5</td><td>&lt; 0.5</td><td>&lt; 0.5</td><td>&lt; 0.5</td></t<>  | Fluoranthene                          | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Indemo(12.3-cd)pyrene         0.5         mg/kg         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5 <td>Fluorene</td> <td>0.5</td> <td>mg/kg</td> <td>&lt; 0.5</td> <td>&lt; 0.5</td> <td>&lt; 0.5</td> <td>&lt; 0.5</td>  | Fluorene                              | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Naphthalene         0.5         mg/kg         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5  | Indeno(1.2.3-cd)pyrene                | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Phenanthrene         0.5         mg/kg         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         mg/kg         <            < 0.1           < 0.5         mg/kg         <          < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5 <td>Naphthalene</td> <td>0.5</td> <td>mg/kg</td> <td>&lt; 0.5</td> <td>&lt; 0.5</td> <td>&lt; 0.5</td> <td>&lt; 0.5</td>  | Naphthalene                           | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Pyrene         0.5         mg/kg         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         < 0.5         mg/kg         -         -         < 0.1         < 0.5         mg/kg         -         -         < 0.1         < 0.5         mg/kg         -         -         < 0.05         < 0.05         mg/kg         -         -         < 0.05          < 0.05         mg/kg         -         < 0.05          < 0.05         mg/kg         -         < 0.05          < 0.05           < 0.05          < 0.05          < 0.05          < 0.05          < 0.05          < 0.05          < 0.05   | Phenanthrene                          | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| Total PAH*         0.5         mg/kg         < 0.5         < 0.5         < 0.5         < 0.5           2-Fluorobiphenyl (surr.)         1         %         114         115         78         127           D-Terphenyl-d14 (surr.)         1         %         63         71         81         127           Organochlorine Pesticides         63         71         81         127           Chordanes - Total         0.1         mg/kg         -         -         <0.05   | Pyrene                                | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| 2+Fluorobjehenyl (surr.)         1         %         114         115         78         127           p-Terphenyl-d14 (surr.)         1         %         63         71         81         127           Organochorne Pesticides   | Total PAH*                            | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | < 0.5        |
| p-Terphenyl-d14 (surr.)         1         %         63         71         81         127           Organchlorine Pesticides         0.1         mg/kg         -         -         <0.1   | 2-Fluorobiphenyl (surr.)              | 1    | %     | 114          | 115          | 78           | 127          |
| Organchlorine Pesticides         Image Network         Image Network | p-Terphenyl-d14 (surr.)               | 1    | %     | 63           | 71           | 81           | 127          |
| Chlordanes - Total         0.1         mg/kg         -         -          < 0.1           4.4'-DDD         0.05         mg/kg         -         -         <  | Organochlorine Pesticides             |      |       |              |              |              |              |
| 4.4'-DDD       0.05       mg/kg       -       -       <  | Chlordanes - Total                    | 0.1  | mg/kg | -            | -            | -            | < 0.1        |
| 4.4'-DDE       0.05       mg/kg       -       -       < < 0.05   | 4.4'-DDD                              | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| 4.4'DDT         0.05 $mg/kg$ -         -         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <   | 4.4'-DDE                              | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| a-BHC         0.05 $mg/kg$ -         -         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <<<   | 4.4'-DDT                              | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| Aldrin       0.05       mg/kg       -       -       < < 0.05   | a-BHC                                 | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| b-BHC $0.05$ mg/kg         -         -         <              <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <  | Aldrin                                | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| d-BHC         0.05         mg/kg         -         -   | b-BHC                                 | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| Dieldrin         0.05         mg/kg         -         -         0.05           Endosulfan I         0.05         mg/kg         -         -         < 0.05  | d-BHC                                 | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| Endosultan I         0.05         mg/kg         -         -         <         <          <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <   |                                       | 0.05 | mg/kg | -            | -            | -            | 0.05         |
| Endosultan II       0.05       mg/kg       -       -       < 0.05  | Endosulfan I                          | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| Endosuitan sulphate         0.05         mg/kg         -         -         <   |                                       | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| Endrin       0.05       mg/kg       -       -       -       < 0.05   |                                       | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| Endrin aldehyde         0.05         mg/kg         -         -         < <t< td=""><td>Endrin<br/>Factoria al de bude</td><td>0.05</td><td>mg/kg</td><td>-</td><td>-</td><td>-</td><td>&lt; 0.05</td></t<>   | Endrin<br>Factoria al de bude         | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| Bridnin ketonie       0.05       Ing/kg       -       -       -       < 0.05   | Endrin aldenyde                       | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| g-Bric (Lindarie)       0.05       mg/kg       -       -       -       < 0.05  |                                       | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| Heptachlor       0.05       mg/kg       -       -       -       < 0.05         Heptachlor epoxide       0.05       mg/kg       -       -       < 0.05  | g-BHC (Lindane)                       | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| Heptachlorepoxide       0.05       mg/kg       -       - <td>Heptachlor opovido</td> <td>0.05</td> <td>mg/kg</td> <td>-</td> <td>-</td> <td>-</td> <td>&lt; 0.05</td>  | Heptachlor opovido                    | 0.05 | mg/kg | -            | -            | -            | < 0.05       |
| Intexaction observence         0.00         Ing/kg         -         -   | Heyachlorobenzene                     | 0.05 | mg/kg | -            |              | -            | < 0.05       |
| Toxaphene         1         mg/kg         -         -  | Methoxychlor                          | 0.05 | ma/ka | -            |              |              | < 0.05       |
| Aldrin and Dieldrin (Total)*         0.05         mg/kg         -         -         0.05           DDT + DDE + DDD (Total)*         0.05         mg/kg         -         -          0.05           Vic EPA IWRG 621 OCP (Total)*         0.1         mg/kg         -         -         <   | Toxaphene                             | 1    | ma/ka | -            |              |              | < 1          |
| DDT + DDE + DDD (Total)*         0.05         mg/kg         -         -         < 0.05           Vic EPA IWRG 621 OCP (Total)*         0.1         mg/kg         -         -         < 0.1   | Aldrin and Dieldrin (Total)*          | 0.05 | ma/ka | -            |              |              | 0.05         |
| Vic EPA IWRG 621 OCP (Total)*         0.1         mg/kg         -         -         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <              <         <         <         < <td>DDT + DDE + DDD (Total)*</td> <td>0.05</td> <td>ma/ka</td> <td>-</td> <td>-</td> <td>-</td> <td>&lt; 0.05</td>  | DDT + DDE + DDD (Total)*              | 0.05 | ma/ka | -            | -            | -            | < 0.05       |
| Vic EPA IWRG 621 Other OCP (Total)*         0.1         mg/kg         -         -         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <              <         <   | Vic EPA IWRG 621 OCP (Total)*         | 0.1  | ma/ka | -            | -            | -            | < 0.1        |
| Dibutylchlorendate (surr.)         1         %         -         -         82           Tetrachloro-m-xylene (surr.)         1         %         -         -         80  | Vic EPA IWRG 621 Other OCP (Total)*   | 0.1  | ma/ka | -            | -            | -            | < 0.1        |
| Tetrachloro-m-xylene (surr.)         1         %         -         -         80  | Dibutylchlorendate (surr.)            | 1    | %     | -            | -            | -            | 82           |
|  | Tetrachloro-m-xylene (surr.)          | 1    | %     | -            | -            | -            | 80           |



| Sample Matrix<br>Eurofine J mg Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date Sample A<br>Date  | Client Sample ID             |     |       | TP16_0.1     | TP16_0.8     | TP17_0.5     | TP18_0.1     |
|--|------------------------------|-----|-------|--------------|--------------|--------------|--------------|
| Eurofiels ingle Sample No.Fiels Acc223S18-boc2233S18-boc2233S18-boc2233S18-boc2233S18-boc2233S18-boc2233Nov 17.2018Nov d <td>Sample Matrix</td> <td></td> <td></td> <td>Soil</td> <td>Soil</td> <td>Soil</td> <td>Soil</td>  | Sample Matrix                |     |       | Soil         | Soil         | Soil         | Soil         |
| Dete SampledLORNov 17, 2018Nov 12, 2018Nov 17, 2018Nov 12, 2018Nov 17, 2018Nov 17, 2018No  | Eurofins   mgt Sample No.    |     |       | S18-No24233  | S18-No24234  | S18-No24236  | S18-No24237  |
| TestRemene         LOR         Unit         Image: Constraint of the second se | Date Sampled                 |     |       | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 |
| Organophosphorus Pesticides </td <td>Test/Reference</td> <td>LOR</td> <td>Unit</td> <td></td> <td></td> <td></td> <td></td>  | Test/Reference               | LOR | Unit  |              |              |              |              |
| Armphosmethyl         0.2         mg/kg         -         -         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <  | Organophosphorus Pesticides  |     |       |              |              |              |              |
| Bolstar         0.2         mg/kg         -         -         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <  | Azinphos-methyl              | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Diotenvinples         0.2         mg/kg         -         -         <         <         0.2           Chiopyritos         0.2         mg/kg         -         -         <  | Bolstar                      | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Chiopyrifes         0.2         mg/kg         -         -         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <  | Chlorfenvinphos              | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Chlopyrifos-methyl         0.2         mg/kg         -         -         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         < <td>Chlorpyrifos</td> <td>0.2</td> <td>ma/ka</td> <td>-</td> <td>-</td> <td>-</td> <td>&lt; 0.2</td>  | Chlorpyrifos                 | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Coursephos         2         mg/kg         -         -         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <        <  | Chlorpyrifos-methyl          | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Demeton-S         0.2         mg/kg         -         -         < 0.2           Demeton-O         0.2         mg/kg         -         -         < 0.2  | Coumaphos                    | 2   | mg/kg | -            | -            | -            | < 2          |
| Demeton-O         0.2         mg/kg         -         -         <         < 0.2           Diazion         0.2         mg/kg         -         -         <0.2   | Demeton-S                    | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Diazinon         0.2         mg/kg         -         -         <         < 0.2           Dinethoras         0.2         mg/kg         -         -         <  | Demeton-O                    | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Dicklorvos         0.2         mg/kg         -         -         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <   | Diazinon                     | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Dimethoate         0.2         mg/kg         -         -         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <   | Dichlorvos                   | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Disultoton         0.2         mg/kg         -         -          < 0.2           EPN         0.2         mg/kg         -         -         < 0.2  | Dimethoate                   | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| EPN         0.2         mg/kg         .  | Disulfoton                   | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Ethion         0.2         mg/kg         .         .         .          <         <         <         <         <         0.2         mg/kg         .  | EPN                          | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Ethoprop         0.2         mg/kg         -         -         <   | Ethion                       | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Ethyl parathion         0.2         mg/kg         -         -         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <  | Ethoprop                     | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Formation         D.2         mg/kg         -         -  | Ethyl parathion              | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Instruction         D.2         mg/kg         -         - <td>Fenitrothion</td> <td>0.2</td> <td>ma/ka</td> <td>-</td> <td>-</td> <td>-</td> <td>&lt; 0.2</td>   | Fenitrothion                 | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Dention         0.2         mg/kg         -         -  | Fensulfothion                | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Math         Mg/kg         -<  | Fenthion                     | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Markan         Data         Mg/g         -         -         <         0.2           Metphos         0.2         mg/kg         -         -         <   | Malathion                    | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Marging         One         Mg/g         -         -         <   | Merphos                      | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| International and the system         International and the system <th< td=""><td>Methyl parathion</td><td>0.2</td><td>ma/ka</td><td>-</td><td>-</td><td>-</td><td>&lt; 0.2</td></th<>  | Methyl parathion             | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Monocrotophos         2         mg/kg         -         -         < <td>Mevinphos</td> <td>0.2</td> <td>ma/ka</td> <td>-</td> <td>-</td> <td>-</td> <td>&lt; 0.2</td>  | Mevinphos                    | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Naled         0.2         mg/kg         -         -         < 0.2           Omethoate         2         mg/kg         -         -         < 2  | Monocrotophos                | 2   | ma/ka | -            | -            | -            | < 2          |
| Difference         Differe  | Naled                        | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Phorate         0.2         mg/kg         -         -  | Omethoate                    | 2   | ma/ka | -            | -            | -            | < 2          |
| Driving         Driving <t< td=""><td>Phorate</td><td>0.2</td><td>ma/ka</td><td>-</td><td>-</td><td>-</td><td>&lt; 0.2</td></t<>   | Phorate                      | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Pyrazophos         0.2         mg/kg         -         -         < 0.2           Ronnel         0.2         mg/kg         -         -         < 0.2  | Pirimiphos-methyl            | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Ronnel         0.2         mg/kg         -         -         < 0.2           Terbufos         0.2         mg/kg         -         -         < 0.2  | Pyrazophos                   | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Terbufos         0.2         mg/kg         -         -         < 0.2           Tetrachlorvinphos         0.2         mg/kg         -         -         < 0.2   | Ronnel                       | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Tetrachlorvinphos         0.2         mg/kg         -         -         < 0.2           Tokuthion         0.2         mg/kg         -         -         < 0.2  | Terbufos                     | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Tokuthion         0.2         mg/kg         -         -         <         0.2           Trichloronate         0.2         mg/kg         -         -         <  | Tetrachlorvinphos            | 0.2 | ma/ka | -            | -            | -            | < 0.2        |
| Trichloronate         0.2         mg/kg         -         -         < 0.2           Triphenylphosphate (surr.)         1         %         -         -         124           Polychlorinated Biphenyls         .         .         .         124           Aroclor-1016         0.1         mg/kg         -         -         <0.1   | Tokuthion                    | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Triphenylphosphate (surr.)         1         %         -         -         124           Polychlorinated Biphenyls         0.1         mg/kg         -         -         124           Aroclor-1016         0.1         mg/kg         -         -         <0.1   | Trichloronate                | 0.2 | mg/kg | -            | -            | -            | < 0.2        |
| Polychlorinated Biphenyls         0.1         mg/kg         -         -         <         0.1           Aroclor-1016         0.1         mg/kg         -         -         <   | Triphenylphosphate (surr.)   | 1   | %     | -            | -            | -            | 124          |
| Aroclor-1016         0.1         mg/kg         -         -         < </td <td>Polychlorinated Biphenyls</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>   | Polychlorinated Biphenyls    |     |       |              |              |              |              |
| Aroclor-1221       0.1       mg/kg       -       -       <          Aroclor-1232       0.1       mg/kg       -       -       <   | Aroclor-1016                 | 0.1 | ma/ka | -            | -            | -            | < 0.1        |
| Aroclor-1232       0.1       mg/kg       -       -       <           Aroclor-1242       0.1       mg/kg       -       -       -       <  | Aroclor-1221                 | 0.1 | ma/ka | -            | -            | -            | < 0.1        |
| Aroclor-1242       0.1       mg/kg       -       -       <          Aroclor-1248       0.1       mg/kg       -       -       <   | Aroclor-1232                 | 0,1 | ma/ka | -            | -            | -            | < 0.1        |
| Aroclor-1248       0.1       mg/kg       -       -       <          Aroclor-1254       0.1       mg/kg       -       -       <   | Aroclor-1242                 | 0,1 | ma/ka | -            | -            | -            | < 0.1        |
| Aroclor-1254       0.1       mg/kg       -       -       <   | Aroclor-1248                 | 0,1 | ma/ka | -            | -            | -            | < 0.1        |
| Aroclor-1260         0.1         mg/kg         -         -         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <         <             <         <         <   | Aroclor-1254                 | 0.1 | ma/ka | -            | -            | -            | < 0.1        |
| Total PCB*         0.1         mg/kg         -         -         <         <         <         <         <         <         <         <         <         <         <         <         <           <         <         <   | Aroclor-1260                 | 0.1 | ma/ka | -            | -            | -            | < 0.1        |
| Dibutylchlorendate (surr.)         1         %         -         -         82           Tetrachloro-m-xylene (surr.)         1         %         -         -         80  | Total PCB*                   | 0.1 | ma/ka | -            | -            | -            | < 0.1        |
| Tetrachloro-m-xylene (surr.)         1         %         -         -         80  | Dibutylchlorendate (surr.)   | 1   | %     | -            | -            | -            | 82           |
|  | Tetrachloro-m-xylene (surr.) | 1   | %     | -            | -            | -            | 80           |



| Client Sample ID<br>Sample Matrix<br>Eurofins   mgt Sample No.<br>Date Sampled |     |       | TP16_0.1<br>Soil<br>S18-No24233<br>Nov 17, 2018 | TP16_0.8<br>Soil<br>S18-No24234<br>Nov 17, 2018 | TP17_0.5<br>Soil<br>S18-No24236<br>Nov 17, 2018 | TP18_0.1<br>Soil<br>S18-No24237<br>Nov 17, 2018 |
|--|-----|-------|---|---|---|---|
| Test/Reference   | LOR | Unit  |   |   |   |   |
| Heavy Metals   |     |       |   |   |   |   |
| Arsenic  | 2   | mg/kg | < 2   | < 2   | < 2   | < 2   |
| Cadmium  | 0.4 | mg/kg | < 0.4   | < 0.4   | < 0.4   | < 0.4   |
| Chromium   | 5   | mg/kg | < 5   | < 5   | < 5   | < 5   |
| Copper   | 5   | mg/kg | < 5   | < 5   | < 5   | 11  |
| Lead   | 5   | mg/kg | 17  | 5.1   | < 5   | 56  |
| Mercury  | 0.1 | mg/kg | < 0.1   | < 0.1   | < 0.1   | < 0.1   |
| Nickel   | 5   | mg/kg | < 5   | < 5   | < 5   | < 5   |
| Zinc   | 5   | mg/kg | 18  | 8.3   | < 5   | 130   |
| % Moisture   | 1   | %     | 1.6   | 2.7   | < 1   | 1.4   |

| Client Sample ID                                 |      |       | TP18_0.4     | TP20_0.1     | QA300        | KYE_TB       |
|--|------|-------|--------------|--------------|--------------|--------------|
| Sample Matrix                                    |      |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.                        |      |       | S18-No24238  | S18-No24239  | S18-No24240  | S18-No24242  |
| Date Sampled                                     |      |       | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 |
| Test/Reference                                   | LOR  | Unit  |              |              |              |              |
| Total Recoverable Hydrocarbons - 1999 NEPM Fract | ions |       |              |              |              |              |
| TRH C6-C9  | 20   | mg/kg | < 20         | < 20         | < 20         | -            |
| TRH C10-C14                                      | 20   | mg/kg | < 20         | < 20         | < 20         | -            |
| TRH C15-C28                                      | 50   | mg/kg | < 50         | < 50         | < 50         | -            |
| TRH C29-C36                                      | 50   | mg/kg | < 50         | < 50         | < 50         | -            |
| TRH C10-36 (Total)                               | 50   | mg/kg | < 50         | < 50         | < 50         | -            |
| BTEX   |      |       |              |              |              |              |
| Benzene  | 0.1  | mg/kg | -            | < 0.1        | < 0.1        | < 0.1        |
| Toluene  | 0.1  | mg/kg | -            | < 0.1        | < 0.1        | < 0.1        |
| Ethylbenzene                                     | 0.1  | mg/kg | -            | < 0.1        | < 0.1        | < 0.1        |
| m&p-Xylenes                                      | 0.2  | mg/kg | -            | < 0.2        | < 0.2        | < 0.2        |
| o-Xylene   | 0.1  | mg/kg | -            | < 0.1        | < 0.1        | < 0.1        |
| Xylenes - Total                                  | 0.3  | mg/kg | -            | < 0.3        | < 0.3        | < 0.3        |
| 4-Bromofluorobenzene (surr.)                     | 1    | %     | -            | 71           | 70           | 106          |
| Volatile Organics                                |      |       |              |              |              |              |
| 1.1-Dichloroethane                               | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.1-Dichloroethene                               | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.1.1-Trichloroethane                            | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.1.1.2-Tetrachloroethane                        | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.1.2-Trichloroethane                            | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.1.2.2-Tetrachloroethane                        | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.2-Dibromoethane                                | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.2-Dichlorobenzene                              | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.2-Dichloroethane                               | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.2-Dichloropropane                              | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.2.3-Trichloropropane                           | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.2.4-Trimethylbenzene                           | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.3-Dichlorobenzene                              | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.3-Dichloropropane                              | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.3.5-Trimethylbenzene                           | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 1.4-Dichlorobenzene                              | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 2-Butanone (MEK)                                 | 0.5  | mg/kg | < 0.5        | -            | -            | -            |



| Client Sample ID                                  |      |       | TP18_0.4     | TP20_0.1     | QA300        | KYE_TB       |
|---|------|-------|--------------|--------------|--------------|--------------|
| Sample Matrix                                     |      |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.                         |      |       | S18-No24238  | S18-No24239  | S18-No24240  | S18-No24242  |
| Date Sampled                                      |      |       | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 |
| Test/Reference                                    | LOR  | Unit  |              |              |              | ,            |
| Volatile Organics                                 | Lon  | 01110 |              |              |              |              |
| 2-Propanone (Acetone)                             | 0.5  | ma/ka | < 0.5        | _            | _            | _            |
| 4-Chlorotoluene                                   | 0.5  | ma/ka | < 0.5        | _            | _            | _            |
| 4-Methyl-2-pentanone (MIBK)                       | 0.5  | ma/ka | < 0.5        | _            | _            | _            |
| Allyl chloride                                    | 0.5  | ma/ka | < 0.5        | _            | _            | _            |
| Benzene   | 0.1  | ma/ka | < 0.1        | -            | -            | -            |
| Bromobenzene                                      | 0.5  | ma/ka | < 0.5        | -            | -            | -            |
| Bromochloromethane                                | 0.5  | ma/ka | < 0.5        | -            | -            | -            |
| Bromodichloromethane                              | 0.5  | ma/ka | < 0.5        | -            | -            | -            |
| Bromoform   | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Bromomethane                                      | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Carbon disulfide                                  | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Carbon Tetrachloride                              | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Chlorobenzene                                     | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Chloroethane                                      | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Chloroform  | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Chloromethane                                     | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| cis-1.2-Dichloroethene                            | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| cis-1.3-Dichloropropene                           | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Dibromochloromethane                              | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Dibromomethane                                    | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Dichlorodifluoromethane                           | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Ethylbenzene                                      | 0.1  | mg/kg | < 0.1        | -            | -            | -            |
| Iodomethane                                       | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Isopropyl benzene (Cumene)                        | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| m&p-Xylenes                                       | 0.2  | mg/kg | < 0.2        | -            | -            | -            |
| Methylene Chloride                                | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| o-Xylene  | 0.1  | mg/kg | < 0.1        | -            | -            | -            |
| Styrene   | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Tetrachloroethene                                 | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Toluene   | 0.1  | mg/kg | < 0.1        | -            | -            | -            |
| trans-1.2-Dichloroethene                          | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| trans-1.3-Dichloropropene                         | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Trichloroethene                                   | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Trichlorofluoromethane                            | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Vinyl chloride                                    | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Xylenes - Total                                   | 0.3  | mg/kg | < 0.3        | -            | -            | -            |
| Total MAH*  | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Vic EPA IWRG 621 CHC (Total)*                     | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| Vic EPA IWRG 621 Other CHC (Total)*               | 0.5  | mg/kg | < 0.5        | -            | -            | -            |
| 4-Bromofluorobenzene (surr.)                      | 1    | %     | 132          | -            | -            | -            |
| Toluene-d8 (surr.)                                | 1    | %     | 117          | -            | -            | -            |
| Total Recoverable Hydrocarbons - 2013 NEPM Fract  | ions |       |              |              |              |              |
| Naphthalene <sup>N02</sup>                        | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | -            |
| TRH C6-C10  | 20   | mg/kg | < 20         | < 20         | < 20         | -            |
| TRH C6-C10 less BTEX (F1) <sup>N04</sup>          | 20   | mg/kg | < 20         | < 20         | < 20         | -            |
| TRH >C10-C16                                      | 50   | mg/kg | < 50         | < 50         | < 50         | -            |
| TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup> | 50   | mg/kg | < 50         | < 50         | < 50         | -            |
| TRH >C16-C34                                      | 100  | mg/kg | < 100        | < 100        | < 100        | -            |
| TRH >C34-C40                                      | 100  | mg/kg | < 100        | < 100        | < 100        | -            |
| TRH >C10-C40 (total)*                             | 100  | mg/kg | < 100        | < 100        | < 100        | -            |



| Client Sample ID                      |      |       | TP18_0.4     | TP20_0.1     | QA300        | KYE_TB       |
|---------------------------------------|------|-------|--------------|--------------|--------------|--------------|
| Sample Matrix                         |      |       | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.             |      |       | S18-No24238  | S18-No24239  | S18-No24240  | S18-No24242  |
| Date Sampled                          |      |       | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 |
| Test/Reference                        | LOR  | Unit  |              |              |              |              |
| Polycyclic Aromatic Hydrocarbons      |      | 0     |              |              |              |              |
| Benzo(a)pyrepe TEO (lower bound) *    | 0.5  | ma/ka | < 0.5        | < 0.5        | < 0.5        | _            |
| Benzo(a)pyrene TEQ (medium bound) *   | 0.5  | ma/ka | 0.6          | 0.6          | 0.6          | _            |
| Benzo(a)pyrene TEQ (upper bound) *    | 0.5  | ma/ka | 1.2          | 1.2          | 1.2          | -            |
| Acenaphthene                          | 0.5  | ma/ka | < 0.5        | < 0.5        | < 0.5        | -            |
| Acenaphthylene                        | 0.5  | ma/ka | < 0.5        | < 0.5        | < 0.5        | -            |
| Anthracene                            | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | -            |
| Benz(a)anthracene                     | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | -            |
| Benzo(a)pyrene                        | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | -            |
| Benzo(b&j)fluoranthene <sup>N07</sup> | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | -            |
| Benzo(g.h.i)perylene                  | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | -            |
| Benzo(k)fluoranthene                  | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | -            |
| Chrysene                              | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | -            |
| Dibenz(a.h)anthracene                 | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | -            |
| Fluoranthene                          | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | -            |
| Fluorene                              | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | -            |
| Indeno(1.2.3-cd)pyrene                | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | -            |
| Naphthalene                           | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | -            |
| Phenanthrene                          | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | -            |
| Pyrene                                | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | -            |
| Total PAH*                            | 0.5  | mg/kg | < 0.5        | < 0.5        | < 0.5        | -            |
| 2-Fluorobiphenyl (surr.)              | 1    | %     | 140          | 120          | 108          | -            |
| p-Terphenyl-d14 (surr.)               | 1    | %     | 90           | 132          | 69           | -            |
| Organochlorine Pesticides             |      |       |              |              |              |              |
| Chlordanes - Total                    | 0.1  | mg/kg | -            | < 0.1        | -            | -            |
| 4.4'-DDD                              | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| 4.4'-DDE                              | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| 4.4'-DDT                              | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| a-BHC                                 | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| Aldrin                                | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| b-BHC                                 | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| d-BHC                                 | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| Dieldrin                              | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| Endosulfan I                          | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| Endosulfan II                         | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| Endosulfan sulphate                   | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| Endrin                                | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| Endrin aldehyde                       | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| Endrin ketone                         | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| g-BHC (Lindane)                       | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| Heptachlor                            | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| Heptachlor epoxide                    | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| Hexachlorobenzene                     | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| Methoxychlor                          | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| Toxaphene                             | 1    | mg/kg | -            | < 1          | -            | -            |
| Aldrin and Dieldrin (Total)*          | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| DDT + DDE + DDD (Total)*              | 0.05 | mg/kg | -            | < 0.05       | -            | -            |
| Vic EPA IWRG 621 OCP (Total)*         | 0.1  | mg/kg | -            | < 0.1        | -            | -            |
| VIC EPA IWRG 621 Other OCP (Total)*   | 0.1  | mg/kg | -            | < 0.1        | -            | -            |
| Dibutyichlorendate (surr.)            | 1    | %     | -            | 90           | -            | -            |
| I etrachloro-m-xylene (surr.)         | 1    | %     | -            | 85           | -            | -            |



| Client Sample ID             |     |       | TP18_0.4     | TP20_0.1     | QA300        | KYE_TB       |  |
|------------------------------|-----|-------|--------------|--------------|--------------|--------------|--|
| Sample Matrix                |     |       | Soil         | Soil         | Soil         | Soil         |  |
| Eurofins   mgt Sample No.    |     |       | S18-No24238  | S18-No24239  | S18-No24240  | S18-No24242  |  |
| Date Sampled                 |     |       | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 |  |
| Test/Reference               | LOR | Unit  |              |              |              |              |  |
| Organophosphorus Pesticides  |     |       |              |              |              |              |  |
| Azinphos-methyl              | 0.2 | ma/ka | -            | < 0.2        | _            | -            |  |
| Bolstar                      | 0.2 | ma/ka | -            | < 0.2        | -            | -            |  |
| Chlorfenvinphos              | 0.2 | ma/ka | -            | < 0.2        | -            | -            |  |
| Chlorpyrifos                 | 0.2 | ma/ka | -            | < 0.2        | -            | -            |  |
| Chlorpyrifos-methyl          | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Coumaphos                    | 2   | mg/kg | -            | < 2          | -            | -            |  |
| Demeton-S                    | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Demeton-O                    | 0.2 | ma/ka | -            | < 0.2        | -            | -            |  |
| Diazinon                     | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Dichlorvos                   | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Dimethoate                   | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Disulfoton                   | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| EPN                          | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Ethion                       | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Ethoprop                     | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Ethyl parathion              | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Fenitrothion                 | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Fensulfothion                | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Fenthion                     | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Malathion                    | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Merphos                      | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Methyl parathion             | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Mevinphos                    | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Monocrotophos                | 2   | mg/kg | -            | < 2          | -            | -            |  |
| Naled                        | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Omethoate                    | 2   | mg/kg | -            | < 2          | -            | -            |  |
| Phorate                      | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Pirimiphos-methyl            | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Pyrazophos                   | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Ronnel                       | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Terbufos                     | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Tetrachlorvinphos            | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Tokuthion                    | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Trichloronate                | 0.2 | mg/kg | -            | < 0.2        | -            | -            |  |
| Triphenylphosphate (surr.)   | 1   | %     | -            | 110          | -            | -            |  |
| Polychlorinated Biphenyls    |     |       |              |              |              |              |  |
| Aroclor-1016                 | 0.1 | mg/kg | -            | < 0.1        | -            | -            |  |
| Aroclor-1221                 | 0.1 | mg/kg | -            | < 0.1        | -            | -            |  |
| Aroclor-1232                 | 0.1 | mg/kg | -            | < 0.1        | -            | -            |  |
| Aroclor-1242                 | 0.1 | mg/kg | -            | < 0.1        | -            | -            |  |
| Aroclor-1248                 | 0.1 | mg/kg | _            | < 0.1        | -            | -            |  |
| Aroclor-1254                 | 0.1 | mg/kg | -            | < 0.1        | -            | -            |  |
| Aroclor-1260                 | 0.1 | mg/kg | _            | < 0.1        | -            | -            |  |
| Total PCB*                   | 0.1 | mg/kg | -            | < 0.1        |              | -            |  |
| Dibutylchlorendate (surr.)   | 1   | %     | _            | 90           | -            | -            |  |
| Tetrachloro-m-xylene (surr.) | 1   | %     | -            | 85           | -            | -            |  |



| Client Sample ID<br>Sample Matrix<br>Eurofins   mgt Sample No.<br>Date Sampled |     |       | TP18_0.4<br>Soil<br>S18-No24238<br>Nov 17, 2018 | TP20_0.1<br>Soil<br>S18-No24239<br>Nov 17, 2018 | QA300<br>Soil<br>S18-No24240<br>Nov 17, 2018 | KYE_TB<br>Soil<br>S18-No24242<br>Nov 17, 2018 |
|--|-----|-------|---|---|--|---|
| Test/Reference   | LOR | Unit  |   |   |  |   |
| Heavy Metals   |     |       |   |   |  |   |
| Arsenic  | 2   | mg/kg | < 2   | < 2   | < 2  | -   |
| Cadmium  | 0.4 | mg/kg | < 0.4   | < 0.4   | < 0.4  | -   |
| Chromium   | 5   | mg/kg | < 5   | 5.3   | < 5  | -   |
| Copper   | 5   | mg/kg | < 5   | 12  | 5.2  | -   |
| Lead   | 5   | mg/kg | < 5   | 42  | 19   | -   |
| Mercury  | 0.1 | mg/kg | < 0.1   | < 0.1   | < 0.1  | -   |
| Nickel   | 5   | mg/kg | < 5   | < 5   | < 5  | -   |
| Zinc   | 5   | mg/kg | < 5   | 66  | 20   | -   |
| % Moisture   | 1   | %     | 3.4   | 3.1   | 1.6  | -   |

| Client Sample ID                                 |      |       | R20KYE_TS    | BH02_0.5     | BH2_1.0      | BH03_0.5     |  |
|--|------|-------|--------------|--------------|--------------|--------------|--|
| Sample Matrix                                    |      |       | Soil         | Soil         | Soil         | Soil         |  |
| Eurofins   mgt Sample No.                        |      |       | S18-No24243  | S18-No24245  | S18-No24246  | S18-No24247  |  |
| Date Sampled                                     |      |       | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 |  |
| Test/Reference                                   | LOR  | Unit  |              |              |              |              |  |
| Total Recoverable Hydrocarbons - 1999 NEPM Fract | ions |       |              |              |              |              |  |
| TRH C6-C9  | 20   | mg/kg | -            | < 20         | < 20         | < 20         |  |
| TRH C10-C14                                      | 20   | mg/kg | -            | < 20         | < 20         | < 20         |  |
| TRH C15-C28                                      | 50   | mg/kg | -            | < 50         | < 50         | < 50         |  |
| TRH C29-C36                                      | 50   | mg/kg | -            | < 50         | < 50         | < 50         |  |
| TRH C10-36 (Total)                               | 50   | mg/kg | -            | < 50         | < 50         | < 50         |  |
| втех   |      |       |              |              |              |              |  |
| Benzene  | 0.1  | mg/kg | 83           | < 0.1        | -            | < 0.1        |  |
| Toluene  | 0.1  | mg/kg | 82           | < 0.1        | -            | < 0.1        |  |
| Ethylbenzene                                     | 0.1  | mg/kg | 82           | < 0.1        | -            | < 0.1        |  |
| m&p-Xylenes                                      | 0.2  | mg/kg | 83           | < 0.2        | -            | < 0.2        |  |
| o-Xylene   | 0.1  | mg/kg | 84           | < 0.1        | -            | < 0.1        |  |
| Xylenes - Total                                  | 0.3  | mg/kg | 84           | < 0.3        | -            | < 0.3        |  |
| 4-Bromofluorobenzene (surr.)                     | 1    | %     | 101          | 64           | -            | 66           |  |
| Volatile Organics                                |      |       |              |              |              |              |  |
| 1.1-Dichloroethane                               | 0.5  | mg/kg | -            | -            | < 0.5        | -            |  |
| 1.1-Dichloroethene                               | 0.5  | mg/kg | -            | -            | < 0.5        | -            |  |
| 1.1.1-Trichloroethane                            | 0.5  | mg/kg | -            | -            | < 0.5        | -            |  |
| 1.1.1.2-Tetrachloroethane                        | 0.5  | mg/kg | -            | -            | < 0.5        | -            |  |
| 1.1.2-Trichloroethane                            | 0.5  | mg/kg | -            | -            | < 0.5        | -            |  |
| 1.1.2.2-Tetrachloroethane                        | 0.5  | mg/kg | -            | -            | < 0.5        | -            |  |
| 1.2-Dibromoethane                                | 0.5  | mg/kg | -            | -            | < 0.5        | -            |  |
| 1.2-Dichlorobenzene                              | 0.5  | mg/kg | -            | -            | < 0.5        | -            |  |
| 1.2-Dichloroethane                               | 0.5  | mg/kg | -            | -            | < 0.5        | -            |  |
| 1.2-Dichloropropane                              | 0.5  | mg/kg | -            | -            | < 0.5        | -            |  |
| 1.2.3-Trichloropropane                           | 0.5  | mg/kg | -            | -            | < 0.5        | -            |  |
| 1.2.4-Trimethylbenzene                           | 0.5  | mg/kg | -            | -            | < 0.5        | -            |  |
| 1.3-Dichlorobenzene                              | 0.5  | mg/kg | -            | -            | < 0.5        | -            |  |
| 1.3-Dichloropropane                              | 0.5  | mg/kg | -            | -            | < 0.5        | -            |  |
| 1.3.5-Trimethylbenzene                           | 0.5  | mg/kg | -            | -            | < 0.5        | -            |  |
| 1.4-Dichlorobenzene                              |      | mg/kg | -            | -            | < 0.5        | -            |  |
| 2-Butanone (MEK)                                 | 0.5  | mg/kg | -            | -            | < 0.5        | -            |  |



| Client Sample ID                                  |     |        | R20KYE_TS    | BH02_0.5     | BH2_1.0      | BH03_0.5     |
|---|-----|--------|--------------|--------------|--------------|--------------|
| Sample Matrix                                     |     |        | Soil         | Soil         | Soil         | Soil         |
| Eurofins   mgt Sample No.                         |     |        | S18-No24243  | S18-No24245  | S18-No24246  | S18-No24247  |
| Date Sampled                                      |     |        | Nov 17, 2018 | Nov 17, 2018 | Nov 17. 2018 | Nov 17, 2018 |
| Test/Reference                                    | LOR | Unit   |              |              |              | - ,          |
| Volatile Organics                                 | Lon | Onit   |              |              |              |              |
| 2-Propanone (Acetone)                             | 0.5 | ma/ka  | _            | _            | < 0.5        |              |
| 4-Chlorotoluene                                   | 0.5 | ma/ka  | _            | _            | < 0.5        | _            |
| 4-Methyl-2-pentanone (MIBK)                       | 0.5 | ma/ka  | _            | _            | < 0.5        | _            |
| Allyl chloride                                    | 0.5 | ma/ka  | -            | -            | < 0.5        | -            |
| Benzene   | 0.1 | ma/ka  | _            | -            | < 0.1        | -            |
| Bromobenzene                                      | 0.5 | ma/ka  | _            | -            | < 0.5        | -            |
| Bromochloromethane                                | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Bromodichloromethane                              | 0.5 | ma/ka  | -            | -            | < 0.5        | -            |
| Bromoform   | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Bromomethane                                      | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Carbon disulfide                                  | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Carbon Tetrachloride                              | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Chlorobenzene                                     | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Chloroethane                                      | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Chloroform  | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Chloromethane                                     | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| cis-1.2-Dichloroethene                            | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| cis-1.3-Dichloropropene                           | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Dibromochloromethane                              | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Dibromomethane                                    | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Dichlorodifluoromethane                           | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Ethylbenzene                                      | 0.1 | mg/kg  | -            | -            | < 0.1        | -            |
| lodomethane                                       | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Isopropyl benzene (Cumene)                        | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| m&p-Xylenes                                       | 0.2 | mg/kg  | -            | -            | < 0.2        | -            |
| Methylene Chloride                                | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| o-Xylene  | 0.1 | mg/kg  | -            | -            | < 0.1        | -            |
| Styrene   | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Tetrachloroethene                                 | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Toluene   | 0.1 | mg/kg  | -            | -            | < 0.1        | -            |
| trans-1.2-Dichloroethene                          | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| trans-1.3-Dichloropropene                         | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Trichloroethene                                   | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Trichlorofluoromethane                            | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
|   | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Xylenes - Total                                   | 0.3 | mg/kg  | -            | -            | < 0.3        | -            |
|   | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
|   | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| Vic EPA IWRG 621 Other CHC (Total)^               | 0.5 | mg/kg  | -            | -            | < 0.5        | -            |
| 4-Bromofluorobenzene (surr.)                      | 1   | %      | -            | -            | 130          | -            |
| Toluene-d8 (surr.)                                | 1   | %      | -            | -            | 109          | -            |
| I otal Recoverable Hydrocarbons - 2013 NEPM Fract |     |        |              | 0.5          | 0.5          | 0.5          |
|   | 0.5 | mg/kg  | -            | < 0.5        | < 0.5        | < 0.5        |
|   | 20  | mg/kg  | -            | < 20         | < 20         | < 20         |
|   | 20  | mg/kg  | -            | < 20         | < 20         | < 20         |
|   | 50  | mg/kg  | -            | < 50         | < 50         | < 50         |
|   | 100 | mg/kg  | -            | < 50         | < 50         | < 50         |
| TRH \$C34_C40                                     | 100 | mg/kg  | -            | < 100        | < 100        | < 100        |
| TRH >C10-C40 (total)*                             | 100 | mg/kg  | -            | < 100        | < 100        | < 100        |
| IRT >010-040 (lotal)                              | 100 | тид/кд | -            | < 100        | < 100        | < 100        |



| Client Sample ID                      |     |       | R20KYE_TS    | BH02_0.5     | BH2_1.0      | BH03_0.5     |  |
|---------------------------------------|-----|-------|--------------|--------------|--------------|--------------|--|
| Sample Matrix                         |     |       | Soil         | Soil         | Soil         | Soil         |  |
| Eurofins   mgt Sample No.             |     |       | S18-No24243  | S18-No24245  | S18-No24246  | S18-No24247  |  |
| Date Sampled                          |     |       | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 | Nov 17, 2018 |  |
| Test/Reference                        | LOR | Unit  |              |              |              |              |  |
| Polycyclic Aromatic Hydrocarbons      |     |       |              |              |              |              |  |
| Benzo(a)pyrene TEQ (lower bound) *    | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| Benzo(a)pyrene TEQ (medium bound) *   | 0.5 | mg/kg | -            | 0.6          | 0.6          | 0.6          |  |
| Benzo(a)pyrene TEQ (upper bound) *    | 0.5 | mg/kg | -            | 1.2          | 1.2          | 1.2          |  |
| Acenaphthene                          | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| Acenaphthylene                        | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| Anthracene                            | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| Benz(a)anthracene                     | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| Benzo(a)pyrene                        | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| Benzo(b&j)fluoranthene <sup>N07</sup> | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| Benzo(g.h.i)perylene                  | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| Benzo(k)fluoranthene                  | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| Chrysene                              | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| Dibenz(a.h)anthracene                 | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| Fluoranthene                          | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| Fluorene                              | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| Indeno(1.2.3-cd)pyrene                | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| Naphthalene                           | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| Phenanthrene                          | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| Pyrene                                | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| Total PAH*                            | 0.5 | mg/kg | -            | < 0.5        | < 0.5        | < 0.5        |  |
| 2-Fluorobiphenyl (surr.)              | 1   | %     | -            | 98           | 105          | 124          |  |
| p-Terphenyl-d14 (surr.)               | 1   | %     | -            | 79           | 82           | 96           |  |
| Heavy Metals                          |     |       |              |              |              |              |  |
| Arsenic                               | 2   | mg/kg | -            | < 2          | < 2          | < 2          |  |
| Cadmium                               | 0.4 | mg/kg | -            | < 0.4        | < 0.4        | < 0.4        |  |
| Chromium                              | 5   | mg/kg | -            | < 5          | < 5          | < 5          |  |
| Copper                                | 5   | mg/kg | -            | < 5          | 5.6          | < 5          |  |
| Lead                                  | 5   | mg/kg | -            | 9.8          | 12           | 7.0          |  |
| Mercury                               | 0.1 | mg/kg | -            | < 0.1        | < 0.1        | < 0.1        |  |
| Nickel                                | 5   | mg/kg | -            | < 5          | < 5          | < 5          |  |
| Zinc 5 m                              |     | mg/kg | -            | 17           | 24           | 6.8          |  |
|                                       |     |       |              |              |              |              |  |
| % Moisture                            | 1   | %     | -            | 18           | 9.6          | 2.0          |  |

| Client Sample ID<br>Sample Matrix<br>Eurofins   mgt Sample No.<br>Date Sampled |     |          | BH02_2.0-2.45<br>Soil<br>S18-No24248<br>Nov 17, 2018 | BH02_4.0-4.45<br>Soil<br>S18-No24249<br>Nov 17, 2018 | BH02_5.5-5.95<br>Soil<br>S18-No24250<br>Nov 17, 2018 | BH02_7.0-7.45<br>Soil<br>S18-No24251<br>Nov 17, 2018 |
|--|-----|----------|--|--|--|--|
| lest/Reference   | LOR | Unit     |  |  |  |  |
| Acid Sulfate Soils Field pH Test   |     |          |  |  |  |  |
| pH-F (Field pH test)*  | 0.1 | pH Units | 7.8  | 6.8  | 9.6  | 8.8  |
| pH-FOX (Field pH Peroxide test)*   | 0.1 | pH Units | 6.1  | 5.2  | 7.5  | 6.2  |
| Reaction Ratings* <sup>S05</sup>   |     | comment  | 1.0  | 1.0  | 1.0  | 4.0  |



| Client Sample ID<br>Sample Matrix<br>Eurofins   mgt Sample No. |     |          | BH02_8.5-8.95<br>Soil<br>S18-No24252 | BH02_10.0-<br>10.45<br>Soil<br>S18-No24253 | BH02_11.5-<br>11.95<br>Soil<br>S18-No24254 | BH02_13.0-<br>13.45<br>Soil<br>S18-No24255 |
|--|-----|----------|--------------------------------------|--|--|--|
| Date Sampled   |     |          | NOV 17, 2018                         | NOV 17, 2018                               | NOV 17, 2018                               | NOV 17, 2018                               |
| Test/Reference   | LOR | Unit     |                                      |  |  |  |
| Acid Sulfate Soils Field pH Test                               |     |          |                                      |  |  |  |
| pH-F (Field pH test)*  | 0.1 | pH Units | 8.6                                  | 9.1  | 9.0  | 8.2  |
| pH-FOX (Field pH Peroxide test)*                               | 0.1 | pH Units | 5.9                                  | 5.1  | 4.5  | 7.9  |
| Reaction Ratings* <sup>S05</sup>                               |     | comment  | 4.0                                  | 4.0  | 4.0  | 4.0  |

| Client Sample ID                 |     |          | BH02_14.5-<br>14.95 | BH02_16.0-<br>16.45 | BH02_17.5-<br>17.95 | BH03_1.0-1.1 |
|----------------------------------|-----|----------|---------------------|---------------------|---------------------|--------------|
| Sample Matrix                    |     |          | Soil                | Soil                | Soil                | Soil         |
| Eurofins   mgt Sample No.        |     |          | S18-No24256         | S18-No24257         | S18-No24258         | S18-No24259  |
| Date Sampled                     |     |          | Nov 17, 2018        | Nov 17, 2018        | Nov 17, 2018        | Nov 17, 2018 |
| Test/Reference                   | LOR | Unit     |                     |                     |                     |              |
| Acid Sulfate Soils Field pH Test |     |          |                     |                     |                     |              |
| pH-F (Field pH test)*            | 0.1 | pH Units | 8.8                 | 6.9                 | 6.2                 | 6.4          |
| pH-FOX (Field pH Peroxide test)* | 0.1 | pH Units | 6.7                 | 6.4                 | 5.6                 | 5.0          |
| Reaction Ratings* <sup>S05</sup> |     | comment  | 1.0                 | 4.0                 | 4.0                 | 1.0          |

| Client Sample ID<br>Sample Matrix<br>Eurofins   mgt Sample No.<br>Date Sampled |     |          | BH03_2.5-2.95<br>Soil<br>S18-No24260<br>Nov 17, 2018 | BH03_4.0-4.45<br>Soil<br>S18-No24261<br>Nov 17, 2018 | BH03_5.5-5.95<br>Soil<br>S18-No24262<br>Nov 17, 2018 | BH03_7.0-7.45<br>Soil<br>S18-No24263<br>Nov 17, 2018 |  |
|--|-----|----------|--|--|--|--|--|
| Test/Reference   | LOR | Unit     |  |  |  |  |  |
| Acid Sulfate Soils Field pH Test   |     |          |  |  |  |  |  |
| pH-F (Field pH test)*  | 0.1 | pH Units | 6.8  | 9.3  | 9.4  | 9.0  |  |
| pH-FOX (Field pH Peroxide test)*   | 0.1 | pH Units | 5.0  | 7.4  | 7.5  | 7.0  |  |
| Reaction Ratings* <sup>S05</sup>   |     | comment  | 2.0  | 1.0  | 1.0  | 2.0  |  |

| Client Sample ID                 |     |              | BH03_8.5-8.95 | BH03_10.0-<br>10.45 | BH03_11.5-<br>11.95 | BH03_13.0-<br>13.45 |
|----------------------------------|-----|--------------|---------------|---------------------|---------------------|---------------------|
| Sample Matrix                    |     |              | Soil          | Soil                | Soil                | Soil                |
| Eurofins   mgt Sample No.        |     |              | S18-No24264   | S18-No24265         | S18-No24266         | S18-No24267         |
| Date Sampled Nov                 |     | Nov 17, 2018 | Nov 17, 2018  | Nov 17, 2018        | Nov 17, 2018        |                     |
| Test/Reference                   | LOR | Unit         |               |                     |                     |                     |
| Acid Sulfate Soils Field pH Test |     |              |               |                     |                     |                     |
| pH-F (Field pH test)*            | 0.1 | pH Units     | 9.1           | 8.9                 | 8.1                 | 8.3                 |
| pH-FOX (Field pH Peroxide test)* | 0.1 | pH Units     | 6.2           | 2.3                 | 4.4                 | 6.1                 |
| Reaction Ratings* <sup>S05</sup> |     | comment      | 4.0           | 4.0                 | 2.0                 | 2.0                 |



### Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

| Description  | Testing Site | Extracted    | Holding Time |
|--|--------------|--------------|--------------|
| Eurofins   mgt Suite B8  |              |              |              |
| Total Recoverable Hydrocarbons - 1999 NEPM Fractions                                     | Melbourne    | Nov 23, 2018 | 14 Day       |
| - Method: LTM-ORG-2010 TRH C6-C40  |              |              |              |
| Volatile Organics  | Melbourne    | Nov 23, 2018 | 7 Days       |
| - Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices                   |              |              |              |
| Total Recoverable Hydrocarbons - 2013 NEPM Fractions                                     | Melbourne    | Nov 23, 2018 | 14 Day       |
| - Method: LTM-ORG-2010 TRH C6-C40  |              |              |              |
| Total Recoverable Hydrocarbons - 2013 NEPM Fractions                                     | Melbourne    | Nov 23, 2018 | 14 Day       |
| - Method: LTM-ORG-2010 TRH C6-C40  |              |              |              |
| Polycyclic Aromatic Hydrocarbons   | Melbourne    | Nov 23, 2018 | 14 Day       |
| - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water                                 |              |              |              |
| Metals M8  | Melbourne    | Nov 23, 2018 | 28 Days      |
| - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS                     |              |              |              |
| Eurofins   mgt Suite B7  |              |              |              |
| BTEX   | Melbourne    | Nov 23, 2018 | 14 Day       |
| - Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices                   |              |              |              |
| Eurofins   mgt Suite B15   |              |              |              |
| Organochlorine Pesticides  | Melbourne    | Nov 23, 2018 | 14 Day       |
| - Method: LTM-ORG-2220 OCP & PCB in Soil and Water                                       |              |              |              |
| Organophosphorus Pesticides  | Melbourne    | Nov 23, 2018 | 14 Day       |
| - Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS                              |              |              |              |
| Polychlorinated Biphenyls  | Melbourne    | Nov 23, 2018 | 28 Days      |
| - Method: LTM-ORG-2220 OCP & PCB in Soil and Water                                       |              |              |              |
| Acid Sulfate Soils Field pH Test   | Brisbane     | Nov 19, 2018 | 7 Days       |
| Method: LTM-GEN-7060 Determination of field pH (pHF) and field pH peroxide (pHFOX) tests |              |              |              |
| % Moisture   | Melbourne    | Nov 19, 2018 | 14 Day       |
| Method: LTM-GEN-7080 Moisture  |              |              |              |

|            | eurofins mgt  |                      | mgt          |        | ABN– 50 005<br>e.mail : Enviro<br>web : www.eur | 35 521<br>ales@eurofins.com<br>fins.com.au |                            |      |      | Melbourne<br>2-5 Kingston Town Close<br>Oakleigh VIC 3166<br>Phone : +61 3 8564 5000<br>NATA # 1261<br>Site # 1254 & 14271 |                         |                          | Sydney<br>Unit F3, Building F<br>16 Mars Road<br>Lane Cove West NSW 2066<br>Phone : +61 2 9900 8400<br>NATA # 1261 Site # 18217 |                                |              | -<br>NSW 20<br>10 8400<br># 1821 | 66<br>7                       | Brisbane<br>1/21 Smallwood Place<br>Murarrie QLD 4172<br>Phone : +61 7 3902 460<br>NATA # 1261 Site # 207 | Perth           2/91 Leach Highway           Kewdale WA 6105           0         Phone : +61 8 9251 9600           94         NATA # 1261           Site # 23736 |   |
|------------|---|----------------------|--------------|--------|---|--|----------------------------|------|------|--|-------------------------|--------------------------|---|--------------------------------|--------------|----------------------------------|-------------------------------|---|--|---|
| Co<br>Ad   | Company Name:       Cardno (NSW/ACT) Pty Ltd         Address:       Level 9, 203 Pacific Highway         St Leonards       NSW 2065         Project Name:       KYEEMAGH INFANTS SCHOOL |                      |              |        |   | Order No.:<br>Report #:<br>Phone:<br>Fax:  |                            |      |      | 6<br>0<br>0  | 28416<br>29496<br>2 949 | 6<br>67700<br>9 390      | 2   |                                |              |                                  |                               | F<br>C<br>F   | Received:<br>Due:<br>Priority:<br>Contact Name:  | Nov 19, 2018 2:52 PM<br>Nov 26, 2018<br>5 Day<br>Ben Withnall |
| Pre<br>Pre | oject Name:<br>oject ID:  | KYEEMAGH<br>80818157 | INFANTS SC   | CHOOL  |   |  |                            |      |      |  |                         |                          |   |                                |              |                                  | rvices Manager : Nibha Vaidya |   |  |   |
|            |   | Sa                   | mple Detail  |        |   | Asbestos - WA guidelines                   | Asbestos Absence /Presence | НОГД | HOLD | Acid Sulfate Soils Field pH Test   | BTEX                    | Eurofins   mgt Suite B15 | Volatile Organics   | TRH (after Silica Gel cleanup) | Moisture Set | Total Recoverable Hydrocarbons   | Eurofins   mgt Suite B7       | Eurofins   mgt Suite B8   |  |   |
| Melk       | oourne Laborato   | ory - NATA Site      | # 1254 & 142 | 271    |   |  |                            | Х    |      |  |                         | х                        | х   | Х                              | х            | х                                | Х                             | Х   |  |   |
| Syd        | ney Laboratory  | - NATA Site # 1      | 8217         |        |   | Х  | X                          |      |      |  | X                       |                          |   |                                |              | X                                | X                             | Х   | -  |   |
| Bris       | bane Laborator  | y - NATA Site #      | 20794        |        |   |  |                            |      | Х    | X  |                         |                          |   |                                |              |                                  |                               |   | 4  |   |
| Pert       | h Laboratory - N  | NATA Site # 237      | '36          |        |   |  |                            |      |      |  |                         |                          |   |                                |              |                                  |                               |   | 4  |   |
| Exte       | ernal Laboratory  |                      |              |        |   |  |                            |      |      |  |                         |                          |   |                                |              |                                  |                               |   | -  |   |
| NO         | Sample ID   | Sample Date          | Time         | Matrix |   |  |                            |      |      |  |                         |                          |   |                                |              |                                  |                               |   |  |   |
| 1          | TP13_0.1  | Nov 17, 2018         |              | Soil   | S18-No24227                                     | Х  |                            |      |      |  |                         | Х                        | Х   |                                | Х            |                                  | Х                             |   |  |   |
| 2          | TP13_0.4  | Nov 17, 2018         |              | Soil   | S18-No24228                                     | Х  |                            |      |      |  |                         |                          |   |                                |              |                                  |                               |   |  |   |
| 3          | TP14_0.1  | Nov 17, 2018         |              | Soil   | S18-No24229                                     | Х  |                            |      |      |  |                         |                          |   |                                |              |                                  |                               |   | 4  |   |
| 4          | TP14_0.7  | Nov 17, 2018         |              | Soil   | S18-No24230                                     |  |                            |      |      |  |                         |                          |   |                                | Х            |                                  |                               | Х   | 4  |   |
| 5          | TP15_0.1  | Nov 17, 2018         |              | Soil   | S18-No24231                                     |  |                            |      |      |  |                         |                          |   |                                | Х            |                                  | X                             |   | 4  |   |
| 6          | TP15_0.6  | Nov 17, 2018         |              | Soil   | S18-No24232                                     |  |                            |      |      |  |                         | Х                        |   |                                | Х            |                                  |                               | X   | -  |   |
| 7          | TP16_0.1  | Nov 17, 2018         |              | Soil   | S18-No24233                                     |  |                            |      |      |  |                         |                          |   |                                | Х            |                                  | X                             |   | 4  |   |
| 8          | TP16_0.8  | Nov 17, 2018         |              | Soil   | S18-No24234                                     |  |                            |      |      |  |                         |                          |   |                                | Х            |                                  |                               | X   | -  |   |
| 9          | TP17_0.1  | Nov 17, 2018         |              | Soil   | S18-No24235                                     | Х  |                            |      |      |  |                         |                          |   |                                |              |                                  |                               |   |  |   |

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|----------|--|--|--------------------------------|-----------------------|--|--------------------------------|----------------------------|---------------------------------|------------------------------------|---|---|---------------------------------|-------------------|--|---|--|------------------------------|-------------------------|---|--|
| Co       | ompany Name:<br>ddress:  | Cardno (NSV<br>Level 9, 203<br>St Leonards<br>NSW 2065 | N/ACT) Pty Lt<br>Pacific Highw | d<br>ay               |  |                                | Or<br>Re<br>Ph<br>Fa       | der N<br>port a<br>none:<br>ix: | o.:<br>#:                          | 6:<br>0:<br>0:  | 28416<br>29496<br>2 949                                 | 6<br>67700<br>9 390             | 2                 |  |   |  |                              | R<br>D<br>P<br>C        | eceived:<br>ue:<br>riority:<br>ontact Name:   | Nov 19, 2018 2:52 PM<br>Nov 26, 2018<br>5 Day<br>Ben Withnall  |
| Pr<br>Pr | oject Name:<br>oject ID:   | KYEEMAGH<br>80818157                                   | INFANTS SC                     | CHOOL                 |  |                                |                            |                                 |                                    |   |   |                                 |                   |  |   |  | Euro                         | ofins                   | mgt Analytical Se   | ervices Manager : Nibha Vaidya   |
|          | Sample Detail<br>Melbourne Laboratory - NATA Site # 1254 & 14271 |  |                                |                       |  |                                | Asbestos Absence /Presence | HOLD                            | HOLD                               | Acid Sulfate Soils Field pH Test  | BTEX  | Eurofins   mgt Suite B15        | Volatile Organics | TRH (after Silica Gel cleanup)                 | Moisture Set  | Total Recoverable Hydrocarbons                   | Eurofins   mgt Suite B7      | Eurofins   mgt Suite B8 |   |  |
| Mel      | bourne Laborato  | ory - NATA Site  | # 1254 & 142                   | ?71                   |  |                                |                            | Х                               |                                    |   |   | х                               | Х                 | Х  | Х   | Х  | Х                            | Х                       |   |  |
| Syd      | ney Laboratory   | - NATA Site # 1  | 8217                           |                       |  | Х                              | Х                          |                                 |                                    |   | х   |                                 |                   |  |   | х  | Х                            | Х                       |   |  |
| Bris     | bane Laborator   | y - NATA Site #  | 20794                          |                       |  |                                |                            |                                 | Х                                  | Х   |   |                                 |                   |  |   |  |                              |                         |   |  |
| Per      | th Laboratory - N  | NATA Site # 237  | 36                             |                       | 1  |                                |                            |                                 |                                    |   |   |                                 |                   |  |   |  |                              |                         |   |  |
| 10       | TP17_0.5   | Nov 17, 2018   |                                | Soil                  | S18-No24236                                    |                                |                            |                                 |                                    |   |   |                                 |                   |  | Х   |  |                              | Х                       |   |  |
| 11       | TP18_0.1   | Nov 17, 2018   |                                | Soil                  | S18-No24237                                    | X                              |                            |                                 |                                    |   |   | Х                               |                   |  | Х   |  | Х                            |                         |   |  |
| 12       | TP18_0.4   | Nov 17, 2018   |                                | Soil                  | S18-No24238                                    | - V                            |                            |                                 |                                    |   |   | ~                               |                   |  | X   |  |                              | Х                       |   |  |
| 13       | 1P20_0.1   | Nov 17, 2018   |                                | Sol                   | S18-No24239                                    | X                              |                            |                                 |                                    |   |   | X                               |                   |  | X   |  | X                            |                         |   |  |
| 14       | QA300  | Nov 17, 2018   |                                | 50II<br>Duildin 7     | 518-No24240                                    |                                |                            |                                 |                                    | <u> </u>  |   |                                 | <u> </u>          |  | X   |  | X                            |                         |   |  |
| 15       | ASB2   | INOV 17, 2018  |                                | Building<br>Materials | 518-N024241                                    |                                | X                          |                                 |                                    |   |   |                                 |                   |  |   |  |                              |                         |   |  |
| 16       | KYE_TB   | Nov 17, 2018   |                                | Soil                  | S18-No24242                                    |                                |                            |                                 |                                    |   | X   |                                 |                   |  |   |  |                              |                         |   |  |
| 17       | KYE_TS   | Nov 17, 2018   |                                | Soil                  | S18-No24243                                    |                                |                            |                                 |                                    |   | X   |                                 |                   |  |   |  |                              |                         |   |  |
| 18       | BH02_0.5   | Nov 17, 2018   |                                | Soil                  | S18-No24245                                    | X                              |                            |                                 |                                    |   |   |                                 |                   |  | Х   |  | Х                            |                         |   |  |
| 19       | BH2_1.0  | Nov 17, 2018   |                                | Soil                  | S18-No24246                                    |                                |                            |                                 |                                    |   |   |                                 |                   |  | Х   |  |                              | Х                       |   |  |
| 20       | BH03_0.5   | Nov 17, 2018   |                                | Soil                  | S18-No24247                                    | Х                              |                            |                                 |                                    |   |   |                                 |                   |  | Х   |  | Х                            |                         |   |  |

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|--|--|--|-----------------------------------|----------|---|-------------------------------|-----------------------------|--------------------------------|----------------------------|---|---|---------------------------------|-------------------|---|--|--|----------------------------|-------------------------|---|--|------|
| Co<br>Ao<br>Pr   | ompany Name:<br>ddress:<br>oiect Name: | Cardno (NSW<br>Level 9, 203 F<br>St Leonards<br>NSW 2065<br>KYEEMAGH I | //ACT) Pty Ltd<br>Pacific Highway | DOL      |   |                               | Or<br>Re<br>Ph<br>Fa        | der N<br>port #<br>ione:<br>x: | o.:<br>#:                  | 6:<br>0:<br>0:  | 28416<br>29496<br>2 949                                 | 6<br>67700<br>9 390             | 2                 |   |  |  |                            | R<br>D<br>P<br>C        | eceived:<br>Due:<br>riority:<br>contact Name:   | Nov 19, 2018 2:52 PM<br>Nov 26, 2018<br>5 Day<br>Ben Withnall  |      |
| Pr   | oject ID:                              | 80818157   |                                   |          |   |                               |                             |                                |                            |   |   |                                 |                   |   |  |  | Euro                       | ofins                   | mgt Analytical Se   | ervices Manager : Nibha Vai  | idya |
| Sample Detail<br>Melbourne Laboratory - NATA Site # 1254 & 14271 |  |  |                                   |          |   | Asbestos - WA guidelines      | Asbestos Absence / Presence | HOLD                           | HOLD                       | Acid Sulfate Soils Field pH Test  | BTEX  | Eurofins   mgt Suite B15        | Volatile Organics | TRH (after Silica Gel cleanup)                  | Moisture Set   | Total Recoverable Hydrocarbons                   | Eurofins   mgt Suite B7    | Eurofins   mgt Suite B8 |   |  |      |
| Mell   | bourne Laborato                        | ory - NATA Site #  | 1254 & 14271                      |          |   |                               |                             | х                              |                            |   |   | х                               | х                 | Х   | Х  | х  | х                          | х                       |   |  |      |
| Syd  | ney Laboratory                         | - NATA Site # 18   | 217                               |          |   | х                             | Х                           |                                |                            |   | х   |                                 |                   |   |  | X  | Х                          | х                       |   |  |      |
| Bris   | bane Laboratory                        | y - NATA Site # 2  | 20794                             |          |   |                               |                             |                                | Х                          | Х   |   |                                 |                   |   |  |  |                            |                         |   |  |      |
| Pert   | th Laboratory - N                      | IATA Site # 2373   | 6                                 |          |   |                               |                             |                                |                            |   |   |                                 |                   |   |  |  |                            |                         |   |  |      |
| 21   | BH02_2.0-2.45                          | Nov 17, 2018   | So                                | il<br>   | S18-No24248                                       |                               |                             |                                |                            | X   |   |                                 |                   |   |  |  |                            |                         |   |  |      |
| 22   | BH02_4.0-4.45                          | Nov 17, 2018   | So                                | 4l<br>:: | S18-No24249                                       |                               |                             |                                |                            | X   |   |                                 |                   |   |  |  |                            |                         |   |  |      |
| 23   | BH02 7 0 7 45                          | Nov 17, 2018   | 50                                | 91<br>;1 | S18 No24250                                       |                               |                             |                                |                            |   |   |                                 |                   |   |  |  |                            |                         |   |  |      |
| 24   | BH02 9 5 9 05                          | Nov 17, 2018   | 50                                | , il     | S18-No24251                                       |                               |                             |                                |                            | × ×   |   |                                 |                   |   |  |  |                            |                         |   |  |      |
| 26   | BH02_10.0-<br>10.45                    | Nov 17, 2018   | S0<br>S0                          | il       | S18-No24253                                       |                               |                             |                                |                            | x   |   |                                 |                   |   |  |  |                            |                         |   |  |      |
| 27   | BH02_11.5-<br>11.95                    | Nov 17, 2018   | So                                | il       | S18-No24254                                       |                               |                             |                                |                            | x   |   |                                 |                   |   |  |  |                            |                         |   |  |      |
| 28   | BH02_13.0-<br>13.45                    | Nov 17, 2018   | So                                | il       | S18-No24255                                       |                               |                             |                                |                            | x   |   |                                 |                   |   |  |  |                            |                         |   |  |      |
| 29   | BH02_14.5-<br>14.95                    | Nov 17, 2018   | So                                | il       | S18-No24256                                       |                               |                             |                                |                            | х   |   |                                 |                   |   |  |  |                            |                         |   |  |      |

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|------------|---|--|--------------------------------|-----------|---|--------------------------------|----------------------------|----------------------------------|-----------------------------|--|---|---------------------------------|-------------------|---|--|--|---------------------------|-------------------------|---|----------------------------------|--|
| Co<br>Ad   | ompany Name:<br>Idress:                 | Cardno (NS)<br>Level 9, 203<br>St Leonards<br>NSW 2065 | W/ACT) Pty Lt<br>Pacific Highw | id<br>/ay |   |                                | Or<br>Re<br>Ph<br>Fa       | der N<br>eport i<br>ione:<br>ix: | o.:<br>#:                   | 6:<br>0:<br>0:   | 28416<br>29496<br>2 949                                 | 6<br>67700<br>9 390             | 2                 |   |  |  |                           | R<br>D<br>P<br>C        | eceived:<br>Jue:<br>Iriority:<br>Contact Name:  | Nov 1<br>Nov 2<br>5 Day<br>Ben V | 9, 2018 2:52 PM<br>:6, 2018<br>,<br>Vithnall   |
| Pro<br>Pro | oject Name:<br>oject ID:                | KYEEMAGH<br>80818157                                   | I INFANTS SC                   | CHOOL     |   |                                |                            |                                  |                             |  |   |                                 |                   |   |  |  | Euro                      | ofins                   | mgt Analytical Se   | ervices                          | Manager : Nibha Vaidya   |
|            |   | Sa   | Imple Detail                   |           |   | Asbestos - WA guidelines       | Asbestos Absence /Presence | HOLD                             | HOLD                        | Acid Sulfate Soils Field pH Test   | BTEX  | Eurofins   mgt Suite B15        | Volatile Organics | TRH (after Silica Gel cleanup)                  | Moisture Set   | Total Recoverable Hydrocarbons                   | Eurofins   mgt Suite B7   | Eurofins   mgt Suite B8 |   |                                  |  |
| Melk       | ourne Laborato                          | ory - NATA Site  | # 1254 & 142                   | 271       |   |                                |                            | Х                                |                             |  |   | Х                               | х                 | Х   | Х  | Х  | Х                         | Х                       |   |                                  |  |
| Sydi       | ney Laboratory                          | - NATA Site # 1  | 8217                           |           |   | Х                              | Х                          |                                  |                             |  | Х   |                                 |                   |   |  | X  | Х                         | Х                       |   |                                  |  |
| Bris       | bane Laboratory                         | y - NATA Site #  | 20794                          |           |   |                                |                            |                                  | Х                           | X  |   |                                 |                   |   |  |  |                           |                         |   |                                  |  |
| 30         | h Laboratory - N<br>BH02_16.0-<br>16.45 | Nov 17, 2018   | 736                            | Soil      | S18-No24257                                       |                                |                            |                                  |                             | x  |   |                                 |                   |   |  |  |                           |                         |   |                                  |  |
| 31         | BH02_17.5-<br>17.95                     | Nov 17, 2018   |                                | Soil      | S18-No24258                                       |                                |                            |                                  |                             | x  |   |                                 |                   |   |  |  |                           |                         |   |                                  |  |
| 32         | BH03_1.0-1.1                            | Nov 17, 2018   |                                | Soil      | S18-No24259                                       |                                |                            |                                  |                             | х  |   |                                 |                   |   |  |  |                           |                         |   |                                  |  |
| 33         | BH03_2.5-2.95                           | Nov 17, 2018   |                                | Soil      | S18-No24260                                       |                                |                            |                                  |                             | х  |   |                                 |                   |   |  |  |                           |                         |   |                                  |  |
| 34         | BH03_4.0-4.45                           | Nov 17, 2018   |                                | Soil      | S18-No24261                                       |                                |                            |                                  |                             | Х  |   |                                 |                   |   |  |  |                           |                         |   |                                  |  |
| 35         | BH03_5.5-5.95                           | Nov 17, 2018   |                                | Soil      | S18-No24262                                       |                                |                            |                                  |                             | Х  |   |                                 |                   |   |  |  |                           |                         |   |                                  |  |
| 36         | BH03_7.0-7.45                           | Nov 17, 2018   |                                | Soil      | S18-No24263                                       |                                | <u> </u>                   |                                  |                             | X  |   |                                 |                   |   |  |  |                           |                         |   |                                  |  |
| 37         | BH03_8.5-8.95                           | Nov 17, 2018   |                                | Soil      | S18-No24264                                       |                                |                            |                                  |                             | X  |   |                                 |                   |   |  |  |                           |                         |   |                                  |  |
| 38         | BH03_10.0-<br>10.45                     | Nov 17, 2018   |                                | Soil      | S18-No24265                                       |                                |                            |                                  |                             | x  |   |                                 |                   |   |  |  |                           |                         |   |                                  |  |
| 39         | BH03_11.5-                              | Nov 17, 2018   |                                | Soil      | S18-No24266                                       |                                |                            |                                  |                             | Х  |   |                                 |                   |   |  |  |                           |                         |   |                                  |  |

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|-----------------|--|--|--|------------------|--|--------------------------------|----------------------------|---------------------------------|-----------------------------|---|--|----------------------------------|-------------------|---|--|---|------------------------------|-------------------------|---|---|---------------------------|
| Co<br>Ad<br>Pro | ompany Name:<br>Idress:<br>oject Name: | Cardno (NS)<br>Level 9, 203<br>St Leonards<br>NSW 2065<br>KYEEMAGH | W/ACT) Pty Lt<br>Pacific Highw<br>I INFANTS SC | d<br>ay<br>CHOOL |  |                                | Or<br>Re<br>Ph<br>Fa       | der N<br>port i<br>none:<br>ix: | lo.:<br>#:                  | 62<br>02<br>02  | 28416<br>29496<br>2 9499                             | 5<br>57700<br>9 390:             | 2                 |   |  |   |                              | F<br>C<br>F<br>C        | Received:<br>Due:<br>Priority:<br>Contact Name:   | Nov 19, 2018 2:52<br>Nov 26, 2018<br>5 Day<br>Ben Withnall  | 2 PM                      |
|                 | oject ID:                              | 00010107   |  |                  |  |                                |                            |                                 |                             |   |  |                                  |                   |   |  |   | Euro                         | ofins                   | mgt Analytical Se   | ervices Manager : N   | libha Vaidya              |
|                 | Sample Detail                          |  |  |                  |  |                                | Asbestos Absence /Presence | HOLD                            | HOLD                        | Acid Sulfate Soils Field pH Test  | BTEX   | Eurofins   mgt Suite B15         | Volatile Organics | TRH (after Silica Gel cleanup)                  | Moisture Set   | Total Recoverable Hydrocarbons                  | Eurofins   mgt Suite B7      | Eurofins   mgt Suite B8 |   |   |                           |
| Melk            | oourne Laborato                        | ory - NATA Site  | # 1254 & 142                                   | 271              |  |                                |                            | Х                               |                             |   |  | Х                                | Х                 | Х   | Х  | Х   | Х                            | Х                       |   |   |                           |
| Syd             | ney Laboratory                         | - NATA Site # 1  | 8217   |                  |  | Х                              | X                          |                                 |                             |   | Х  |                                  |                   |   |  | X   | Х                            | Х                       | 4   |   |                           |
| Bris            | bane Laboratory                        | y - NATA Site #  | 20794  |                  |  |                                |                            |                                 | Х                           | X   |  |                                  |                   |   |  |   |                              |                         | 4   |   |                           |
| Pert            | Perth Laboratory - NATA Site # 23736   |  |  |                  |  |                                |                            |                                 |                             |   |  |                                  |                   |   |  |   |                              |                         | 4   |   |                           |
| 40              | BH03_13.0-<br>13.45                    | Nov 17, 2018   |  | Soil             | S18-No24267                                    |                                |                            |                                 |                             | x   |  |                                  |                   |   |  |   |                              |                         | -   |   |                           |
| 41              | TP20_0.4                               | Nov 17, 2018   |  | Soil             | S18-No24268                                    |                                |                            | x                               |                             |   |  |                                  |                   |   |  |   |                              |                         | ]   |   |                           |
| 42              | KYE_GUM                                | Nov 17, 2018   |  | Water            | S18-No24269                                    |                                |                            |                                 |                             |   |  |                                  |                   | х   |  | Х   |                              |                         | ]   |   |                           |
| 43              | BH02_2.0                               | Nov 17, 2018   |  | Soil             | S18-No24270                                    |                                |                            |                                 | Х                           |   |  |                                  |                   |   |  |   |                              |                         |   |   |                           |
| 44              | KYE_RIN                                | Nov 17, 2018   |  | Water            | S18-No24271                                    |                                |                            |                                 |                             |   |  |                                  |                   |   |  |   |                              | Х                       |   |   |                           |
| Test            | Counts                                 |  |  |                  |  | 8                              | 1                          | 2                               | 2                           | 20  | 2  | 4                                | 1                 | 1   | 14   | 1   | 8                            | 7                       |   |   |                           |



### Internal Quality Control Review and Glossary

### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.

- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- 4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- 6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- 7. Samples were analysed on an 'as received' basis.
- 8. This report replaces any interim results previously issued.

### **Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days. \*\*NOTE: pH duplicates are reported as a range NOT as RPD

### Units

| mg/kg: milligrams per kilogram           | mg/L: milligrams per litre         | ug/L: micrograms per litre                                       |
|--|------------------------------------|--|
| ppm: Parts per million                   | ppb: Parts per billion             | %: Percentage  |
| org/100mL: Organisms per 100 millilitres | NTU: Nephelometric Turbidity Units | MPN/100mL: Most Probable Number of organisms per 100 millilitres |

### Terms

| Dry              | Where a moisture has been determined on a solid sample the result is expressed on a dry basis.   |
|------------------|--|
| LOR              | Limit of Reporting.  |
| SPIKE            | Addition of the analyte to the sample and reported as percentage recovery.   |
| RPD              | Relative Percent Difference between two Duplicate pieces of analysis.  |
| LCS              | Laboratory Control Sample - reported as percent recovery.  |
| CRM              | Certified Reference Material - reported as percent recovery.   |
| Method Blank     | In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.     |
| Surr - Surrogate | The addition of a like compound to the analyte target and reported as percentage recovery.   |
| Duplicate        | A second piece of analysis from the same sample and reported in the same units as the result to show comparison.   |
| USEPA            | United States Environmental Protection Agency  |
| APHA             | American Public Health Association   |
| TCLP             | Toxicity Characteristic Leaching Procedure   |
| сос              | Chain of Custody   |
| SRA              | Sample Receipt Advice  |
| QSM              | Quality Systems Manual ver 5.1 US Department of Defense  |
| СР               | Client Parent - QC was performed on samples pertaining to this report  |
| NCP              | Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within. |
| TEQ              | Toxic Equivalency Quotient   |

### **QC** - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

### **QC Data General Comments**

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike.
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- 9. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



### **Quality Control Results**

| Test   | Units | Result 1 |     | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|--|-------|----------|-----|----------------------|----------------|--------------------|
| Method Blank   |       |          |     | -                    |                |                    |
| Total Recoverable Hydrocarbons - 1999 NEPM Fractions |       |          |     |                      |                |                    |
| TRH C6-C9  | mg/kg | < 20     |     | 20                   | Pass           |                    |
| TRH C10-C14  | mg/kg | < 20     |     | 20                   | Pass           |                    |
| TRH C15-C28  | mg/kg | < 50     |     | 50                   | Pass           |                    |
| TRH C29-C36  | mg/kg | < 50     |     | 50                   | Pass           |                    |
| Method Blank   |       | 1        | 1   | 1                    |                |                    |
| BTEX   |       |          |     |                      |                |                    |
| Benzene  | mg/kg | < 0.1    |     | 0.1                  | Pass           |                    |
| Toluene  | mg/kg | < 0.1    |     | 0.1                  | Pass           |                    |
| Ethylbenzene   | mg/kg | < 0.1    |     | 0.1                  | Pass           |                    |
| m&p-Xylenes  | mg/kg | < 0.2    |     | 0.2                  | Pass           |                    |
| o-Xylene   | mg/kg | < 0.1    |     | 0.1                  | Pass           |                    |
| Xylenes - Total                                      | mg/kg | < 0.3    |     | 0.3                  | Pass           |                    |
| Method Blank   |       | 1        | I I | 1                    |                |                    |
| Volatile Organics                                    | 1     |          |     |                      |                |                    |
| 1.1-Dichloroethane                                   | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.1-Dichloroethene                                   | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.1.1-Trichloroethane                                | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.1.1.2-Tetrachloroethane                            | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.1.2-Trichloroethane                                | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.1.2.2-Tetrachloroethane                            | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.2-Dibromoethane                                    | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.2-Dichlorobenzene                                  | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.2-Dichloroethane                                   | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.2-Dichloropropane                                  | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.2.3-Trichloropropane                               | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.2.4-Trimethylbenzene                               | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.3-Dichlorobenzene                                  | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.3-Dichloropropane                                  | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.3.5-Trimethylbenzene                               | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 1.4-Dichlorobenzene                                  | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 2-Butanone (MEK)                                     | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 2-Propanone (Acetone)                                | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 4-Chlorotoluene                                      | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| 4-Methyl-2-pentanone (MIBK)                          | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Allyl chloride                                       | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Benzene  | mg/kg | < 0.1    |     | 0.1                  | Pass           |                    |
| Bromobenzene   | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Bromochloromethane                                   | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Bromodichloromethane                                 | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Bromoform  | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Bromomethane   | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Carbon disulfide                                     | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Carbon Tetrachloride                                 | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Chlorobenzene  | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Chloroethane   | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Chloroform   | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Chloromethane  | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| cis-1.2-Dichloroethene                               | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| cis-1.3-Dichloropropene                              | mg/kg | < 0.5    |     | 0.5                  | Pass           |                    |
| Dibromochloromethane                                 | mg/kg | < 0.5    |     | 0.5                  | Pass           | i 7                |



| Test   | Units    | Result 1 | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|--|----------|----------|----------------------|----------------|--------------------|
| Dibromomethane                                       | mg/kg    | < 0.5    | 0.5                  | Pass           |                    |
| Dichlorodifluoromethane                              | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Ethylbenzene   | mg/kg    | < 0.1    | 0.1                  | Pass           |                    |
| lodomethane  | mg/kg    | < 0.5    | 0.5                  | Pass           |                    |
| Isopropyl benzene (Cumene)                           | mg/kg    | < 0.5    | 0.5                  | Pass           |                    |
| m&p-Xvlenes  | ma/ka    | < 0.2    | 0.2                  | Pass           |                    |
| Methylene Chloride                                   | mg/kg    | < 0.5    | 0.5                  | Pass           |                    |
| o-Xylene   | mg/kg    | < 0.1    | 0.1                  | Pass           |                    |
| Styrene  | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Tetrachloroethene                                    | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Toluene  | mg/kg    | < 0.1    | 0.1                  | Pass           |                    |
| trans-1.2-Dichloroethene                             | mg/kg    | < 0.5    | 0.5                  | Pass           |                    |
| trans-1.3-Dichloropropene                            | mg/kg    | < 0.5    | 0.5                  | Pass           |                    |
| Trichloroethene                                      | mg/kg    | < 0.5    | 0.5                  | Pass           |                    |
| Trichlorofluoromethane                               | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Vinvl chloride                                       | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Xvlenes - Total                                      | ma/ka    | < 0.3    | 0.3                  | Pass           |                    |
| Method Blank   |          |          |                      |                |                    |
| Total Recoverable Hydrocarbons - 2013 NEPM Fractions |          |          |                      |                |                    |
| Naphthalene  | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| TRH C6-C10   | ma/ka    | < 20     | 20                   | Pass           |                    |
| TRH >C10-C16   | ma/ka    | < 50     | 50                   | Pass           |                    |
| TRH >C16-C34   | ma/ka    | < 100    | 100                  | Pass           |                    |
| TRH >C34-C40   | ma/ka    | < 100    | 100                  | Pass           |                    |
| Method Blank   | iiig/itg | 100      | 100                  | 1 400          |                    |
| Polycyclic Aromatic Hydrocarbons                     |          |          |                      |                |                    |
| Acenaphthene   | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Acenaphthylene                                       | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Anthracene   | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Benz(a)anthracene                                    | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Benzo(a)pyrene                                       | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Benzo(b&i)fluoranthene                               | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Benzo(a h i)pervlene                                 | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Benzo(k)fluoranthene                                 | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Chrysene   | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
|  | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Fluoranthene   | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Fluorene   | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Indeno(1,2,3-cd)pyrepe                               | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Nanhthalene  | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Phenanthrene   | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Pyrene   | ma/ka    | < 0.5    | 0.5                  | Pass           |                    |
| Method Blank   | iiig/itg | < 0.0    | 0.0                  | 1 400          |                    |
| Organochlorine Pesticides                            |          |          |                      |                |                    |
| Chlordanes - Total                                   | ma/ka    | < 0.1    | 0.1                  | Pass           |                    |
|  | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| 4.4'-DDE   | ma/ka    | < 0.00   | 0.05                 | Pass           |                    |
| 4 4'-DDT   | ma/ka    | < 0.00   | 0.05                 | Pass           |                    |
| a-BHC  | ma/ka    | < 0.05   | 0.05                 | Pase           |                    |
| Aldrin   | mg/kg    | < 0.05   | 0.05                 | Pass           |                    |
| h-BHC  | ma/ka    | < 0.05   | 0.05                 | Pase           |                    |
| d-BHC  | mg/kg    | < 0.05   | 0.05                 | Pase           |                    |
| Dieldrin   | ma/ka    | < 0.05   | 0.05                 | Page           |                    |
| Endosulfan I   | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |



| Test                        | Units    | Result 1 | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|-----------------------------|----------|----------|----------------------|----------------|--------------------|
| Endosulfan II               | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Endosulfan sulphate         | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Endrin                      | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Endrin aldehvde             | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Endrin ketone               | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| g-BHC (Lindane)             | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Heptachlor                  | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Heptachlor epoxide          | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Hexachlorobenzene           | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Methoxychlor                | ma/ka    | < 0.05   | 0.05                 | Pass           |                    |
| Toyaphene                   | ma/ka    | < 1      | 1                    | Pass           |                    |
| Method Blank                | iiig/itg |          | -                    | 1 400          |                    |
| Organonhosphorus Pesticides |          |          |                      |                |                    |
| Azinnhos-methyl             | ma/ka    | < 0.2    | 0.2                  | Pass           |                    |
| Boletar                     | mg/kg    | < 0.2    | 0.2                  | Dass           |                    |
| Chlorfonvinnhos             | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Chlorpuritos                | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Chlorpyritos                | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Courseshee                  | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Countaprios                 | mg/kg    | < 2      | 2                    | Pass           |                    |
| Demeter 0                   | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Diaminan                    | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Diazinon                    | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Dichlorvos                  | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Dimethoate                  | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
|                             | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
|                             | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
|                             | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Ethoprop                    | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Ethyl parathion             | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
|                             | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
|                             | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Fenthion                    | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Malathion                   | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Merphos                     | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Methyl parathion            | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Mevinphos                   | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Monocrotophos               | mg/kg    | < 2      | <br>2                | Pass           |                    |
| Naled                       | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Omethoate                   | mg/kg    | < 2      | <br>2                | Pass           |                    |
| Phorate                     | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Pirimiphos-methyl           | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Pyrazophos                  | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Ronnel                      | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Terbufos                    | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Tetrachlorvinphos           | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Tokuthion                   | mg/kg    | < 0.2    | 0.2                  | Pass           |                    |
| Trichloronate               | mg/kg    | < 0.2    | <br>0.2              | Pass           |                    |
| Method Blank                |          | i        | <br>                 |                |                    |
| Polychlorinated Biphenyls   |          |          |                      |                |                    |
| Aroclor-1016                | mg/kg    | < 0.1    | <br>0.1              | Pass           |                    |
| Aroclor-1221                | mg/kg    | < 0.1    | 0.1                  | Pass           |                    |
| Aroclor-1232                | mg/kg    | < 0.1    | <br>0.1              | Pass           |                    |
| Aroclor-1242                | mg/kg    | < 0.1    | 0.1                  | Pass           |                    |
| Aroclor-1248                | mg/kg    | < 0.1    | 0.1                  | Pass           |                    |



| Test   | Units     | Result 1 |  | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|--|-----------|----------|--|----------------------|----------------|--------------------|
| Aroclor-1254   | mg/kg     | < 0.1    |  | 0.1                  | Pass           |                    |
| Aroclor-1260   | mg/kg     | < 0.1    |  | 0.1                  | Pass           |                    |
| Total PCB*   | mg/kg     | < 0.1    |  | 0.1                  | Pass           |                    |
| Method Blank   |           |          |  |                      |                |                    |
| Heavy Metals   |           |          |  |                      |                |                    |
| Arsenic  | mg/kg     | < 2      |  | 2                    | Pass           |                    |
| Cadmium  | mg/kg     | < 0.4    |  | 0.4                  | Pass           |                    |
| Chromium   | mg/kg     | < 5      |  | 5                    | Pass           |                    |
| Copper   | ma/ka     | < 5      |  | 5                    | Pass           |                    |
| Lead   | ma/ka     | < 5      |  | 5                    | Pass           |                    |
| Mercury  | ma/ka     | < 0.1    |  | 0.1                  | Pass           |                    |
| Nickel   | ma/ka     | < 5      |  | 5                    | Pass           |                    |
| Zinc   | ma/ka     | < 5      |  | 5                    | Pass           |                    |
| LCS - % Recovery                                     |           |          |  |                      | 1 400          |                    |
| Total Recoverable Hydrocarbons - 1999 NEPM Fractions |           |          |  |                      |                |                    |
| TRH C6-C9  | %         | 75       |  | 70-130               | Pass           |                    |
| TRH C10-C14  | %         | 79       |  | 70-130               | Pass           |                    |
|  | /0        | 10       |  | 10 100               | 1 400          |                    |
| BTEX   |           |          |  |                      |                |                    |
| Benzene  | %         | 85       |  | 70-130               | Pass           |                    |
|  | 70<br>0/2 | 83       |  | 70-130               | Pass           |                    |
| Ethylbenzene   | 70<br>0/_ | 78       |  | 70-130               | Pass           |                    |
|  | 70<br>0/. | 20       |  | 70-130               | Pass           |                    |
|  | /0<br>0/. | 91       |  | 70-130               | Pass           |                    |
| Vulence Total  | -70<br>0/ | 01       |  | 70-130               | Pass           |                    |
|  | -70       | 02       |  | 70-130               | Fass           |                    |
| Veletile Organice                                    |           |          |  |                      | [              |                    |
| Volatile Organics                                    | 0/        | 77       |  | 70.420               | Deee           |                    |
| 1.1-Dichloroethene                                   | 70<br>0/  | 11       |  | 70-130               | Pass           |                    |
|  | %         | 117      |  | 70-130               | Pass           |                    |
| 1.2-Dichlorosthans                                   | %         | 104      |  | 70-130               | Pass           |                    |
|  | %         | 116      |  | 70-130               | Pass           |                    |
|  | %         | 105      |  | 70-130               | Pass           |                    |
| LCS - % Recovery                                     |           |          |  |                      | [              |                    |
| Total Recoverable Hydrocarbons - 2013 NEPM Fractions |           |          |  | 70.400               |                |                    |
| Naphthalene  | %         | 86       |  | 70-130               | Pass           |                    |
|  | %         | 103      |  | 70-130               | Pass           |                    |
| IRH >C10-C16   | %         | /8       |  | 70-130               | Pass           |                    |
| LCS - % Recovery                                     |           |          |  |                      | [              |                    |
| Polycyclic Aromatic Hydrocarbons                     |           |          |  |                      |                |                    |
| Acenaphthene   | %         | 103      |  | 70-130               | Pass           |                    |
| Acenaphthylene                                       | %         | 113      |  | 70-130               | Pass           |                    |
| Anthracene   | %         | 108      |  | 70-130               | Pass           |                    |
| Benz(a)anthracene                                    | %         | 105      |  | 70-130               | Pass           |                    |
| Benzo(a)pyrene                                       | %         | 91       |  | 70-130               | Pass           |                    |
| Benzo(b&j)fluoranthene                               | %         | 118      |  | 70-130               | Pass           |                    |
| Benzo(g.h.i)perylene                                 | %         | 108      |  | 70-130               | Pass           |                    |
| Benzo(k)fluoranthene                                 | %         | 99       |  | 70-130               | Pass           |                    |
| Chrysene   | %         | 101      |  | 70-130               | Pass           |                    |
| Dibenz(a.h)anthracene                                | %         | 107      |  | 70-130               | Pass           | <u> </u>           |
| Fluoranthene   | %         | 100      |  | 70-130               | Pass           | <u> </u>           |
| Fluorene   | %         | 111      |  | 70-130               | Pass           |                    |
| Indeno(1.2.3-cd)pyrene                               | %         | 104      |  | 70-130               | Pass           |                    |
| Naphthalene  | %         | 103      |  | 70-130               | Pass           |                    |
| Phenanthrene   | %         | 109      |  | 70-130               | Pass           |                    |



| Test                             |               |        | Units | Result 1 |  | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|----------------------------------|---------------|--------|-------|----------|--|----------------------|----------------|--------------------|
| Pyrene                           |               |        | %     | 97       |  | 70-130               | Pass           |                    |
| LCS - % Recovery                 |               |        |       |          |  |                      |                |                    |
| Organochlorine Pesticides        |               |        |       |          |  |                      |                |                    |
| 4.4'-DDD                         |               |        | %     | 118      |  | 70-130               | Pass           |                    |
| 4.4'-DDE                         |               |        | %     | 120      |  | 70-130               | Pass           |                    |
| 4.4'-DDT                         |               |        | %     | 77       |  | 70-130               | Pass           |                    |
| a-BHC                            |               |        | %     | 96       |  | 70-130               | Pass           |                    |
| Aldrin                           |               |        | %     | 111      |  | 70-130               | Pass           |                    |
| b-BHC                            |               |        | %     | 107      |  | 70-130               | Pass           |                    |
| d-BHC                            |               |        | %     | 106      |  | 70-130               | Pass           |                    |
| Dieldrin                         |               |        | %     | 108      |  | 70-130               | Pass           |                    |
| Endosulfan I                     |               |        | %     | 109      |  | 70-130               | Pass           |                    |
| Endosulfan II                    |               |        | %     | 97       |  | 70-130               | Pass           |                    |
| Endosulfan sulphate              |               |        | %     | 91       |  | 70-130               | Pass           |                    |
| Endrin                           |               |        | %     | 104      |  | 70-130               | Pass           |                    |
| Endrin aldehyde                  |               |        | %     | 103      |  | 70-130               | Pass           |                    |
| Endrin ketone                    |               |        | %     | 96       |  | 70-130               | Pass           |                    |
| g-BHC (Lindane)                  |               |        | %     | 104      |  | 70-130               | Pass           |                    |
| Heptachlor                       |               |        | %     | 104      |  | 70-130               | Pass           |                    |
| Heptachlor epoxide               |               |        | %     | 109      |  | 70-130               | Pass           |                    |
| Hexachlorobenzene                |               |        | %     | 90       |  | 70-130               | Pass           |                    |
| Methoxychlor                     |               |        | %     | 83       |  | 70-130               | Pass           |                    |
| LCS - % Recovery                 |               |        |       |          |  |                      |                |                    |
| Organophosphorus Pesticides      |               |        |       |          |  |                      |                |                    |
| Diazinon                         |               |        | %     | 80       |  | 70-130               | Pass           |                    |
| Dimethoate                       |               |        | %     | 94       |  | 70-130               | Pass           |                    |
| Ethion                           |               |        | %     | 118      |  | 70-130               | Pass           |                    |
| Fenitrothion                     |               |        | %     | 88       |  | 70-130               | Pass           |                    |
| Methyl parathion                 |               |        | %     | 98       |  | 70-130               | Pass           |                    |
| Mevinphos                        |               |        | %     | 88       |  | 70-130               | Pass           |                    |
| LCS - % Recovery                 |               |        |       | •        |  |                      |                |                    |
| Polychlorinated Biphenyls        |               |        |       |          |  |                      |                |                    |
| Aroclor-1260                     |               |        | %     | 114      |  | 70-130               | Pass           |                    |
| LCS - % Recovery                 |               |        |       | •        |  |                      |                |                    |
| Heavy Metals                     |               |        |       |          |  |                      |                |                    |
| Arsenic                          |               |        | %     | 105      |  | 80-120               | Pass           |                    |
| Cadmium                          |               |        | %     | 103      |  | 80-120               | Pass           |                    |
| Chromium                         |               |        | %     | 109      |  | 80-120               | Pass           |                    |
| Copper                           |               |        | %     | 112      |  | 80-120               | Pass           |                    |
| Lead                             |               |        | %     | 106      |  | 80-120               | Pass           |                    |
| Mercury                          |               |        | %     | 87       |  | 75-125               | Pass           |                    |
| Nickel                           |               |        | %     | 109      |  | 80-120               | Pass           |                    |
| Zinc                             |               |        | %     | 104      |  | 80-120               | Pass           |                    |
| Tost                             | Lab Sample ID | QA     | Unite | Pocult 1 |  | Acceptance           | Pass           | Qualifying         |
| Test                             | Lab Sample ID | Source | Units | Result I |  | Limits               | Limits         | Code               |
| Spike - % Recovery               |               |        |       | 1        |  | 1                    |                |                    |
| Polycyclic Aromatic Hydrocarbons | ;<br>[        |        |       | Result 1 |  |                      |                |                    |
| Acenaphthene                     | S18-No21893   | NCP    | %     | 100      |  | 70-130               | Pass           |                    |
| Acenaphthylene                   | S18-No21893   | NCP    | %     | 106      |  | 70-130               | Pass           |                    |
| Anthracene                       | S18-No21893   | NCP    | %     | 101      |  | 70-130               | Pass           |                    |
| Benz(a)anthracene                | S18-No21893   | NCP    | %     | 115      |  | 70-130               | Pass           |                    |
| Benzo(a)pyrene                   | S18-No21893   | NCP    | %     | 97       |  | 70-130               | Pass           |                    |
| Benzo(b&j)fluoranthene           | S18-No21893   | NCP    | %     | 110      |  | 70-130               | Pass           |                    |
| Benzo(g.h.i)perylene             | S18-No21893   | NCP    | %     | 114      |  | 70-130               | Pass           |                    |
| Benzo(k)fluoranthene             | S18-No21893   | NCP    | %     | 110      |  | 70-130               | Pass           |                    |



| Test                             | Lab Sample ID   | QA<br>Source | Units | Result 1 |           | Acceptance | Pass<br>Limits | Qualifying<br>Code |
|----------------------------------|-----------------|--------------|-------|----------|-----------|------------|----------------|--------------------|
| Chrysene                         | S18-No21893     | NCP          | %     | 110      |           | 70-130     | Pass           |                    |
| Dibenz(a,h)anthracene            | S18-No21893     | NCP          | %     | 119      |           | 70-130     | Pass           |                    |
| Fluoranthene                     | S18-No21893     | NCP          | %     | 104      |           | 70-130     | Pass           |                    |
| Fluorene                         | S18-No21893     | NCP          | %     | 108      |           | 70-130     | Pass           |                    |
| Indeno(1.2.3-cd)pyrene           | S18-No21893     | NCP          | %     | 113      |           | 70-130     | Pass           |                    |
| Naphthalene                      | S18-No21893     | NCP          | %     | 101      |           | 70-130     | Pass           |                    |
| Phenanthrene                     | S18-No21893     | NCP          | %     | 102      |           | 70-130     | Pass           |                    |
| Pyrene                           | S18-No21893     | NCP          | %     | 105      |           | 70-130     | Pass           |                    |
| Spike - % Recovery               |                 |              |       |          | · · · · · |            |                |                    |
| Organochlorine Pesticides        |                 |              |       | Result 1 |           |            |                |                    |
| 4.4'-DDD                         | M18-No24980     | NCP          | %     | 100      |           | 70-130     | Pass           |                    |
| 4.4'-DDE                         | M18-No24980     | NCP          | %     | 113      |           | 70-130     | Pass           |                    |
| 4.4'-DDT                         | M18-No24980     | NCP          | %     | 130      |           | 70-130     | Pass           |                    |
| a-BHC                            | M18-No24980     | NCP          | %     | 88       |           | 70-130     | Pass           |                    |
| Aldrin                           | M18-No24980     | NCP          | %     | 100      |           | 70-130     | Pass           |                    |
| b-BHC                            | M18-No24980     | NCP          | %     | 97       |           | 70-130     | Pass           |                    |
| d-BHC                            | M18-No24980     | NCP          | %     | 102      |           | 70-130     | Pass           |                    |
| Dieldrin                         | M18-No24980     | NCP          | %     | 98       |           | 70-130     | Pass           |                    |
| Endosulfan I                     | M18-No24980     | NCP          | %     | 99       |           | 70-130     | Pass           |                    |
| Endosulfan II                    | M18-No24980     | NCP          | %     | 93       |           | 70-130     | Pass           |                    |
| Endosulfan sulphate              | M18-No24980     | NCP          | %     | 101      |           | 70-130     | Pass           |                    |
| Endrin                           | M18-No24980     | NCP          | %     | 110      |           | 70-130     | Pass           |                    |
| Endrin aldehyde                  | M18-No24980     | NCP          | %     | 103      |           | 70-130     | Pass           |                    |
| Endrin ketone                    | M18-No24980     | NCP          | %     | 105      |           | 70-130     | Pass           |                    |
| g-BHC (Lindane)                  | M18-No24980     | NCP          | %     | 96       |           | 70-130     | Pass           |                    |
| Heptachlor                       | M18-No24980     | NCP          | %     | 113      |           | 70-130     | Pass           |                    |
| Heptachlor epoxide               | M18-No24980     | NCP          | %     | 98       |           | 70-130     | Pass           |                    |
| Hexachlorobenzene                | M18-No24980     | NCP          | %     | 82       |           | 70-130     | Pass           |                    |
| Methoxychlor                     | M18-No24980     | NCP          | %     | 127      |           | 70-130     | Pass           |                    |
| Spike - % Recovery               |                 |              |       |          |           |            |                |                    |
| Organophosphorus Pesticides      |                 |              |       | Result 1 |           |            |                |                    |
| Diazinon                         | M18-No28383     | NCP          | %     | 95       |           | 70-130     | Pass           |                    |
| Dimethoate                       | M18-No28383     | NCP          | %     | 78       |           | 70-130     | Pass           |                    |
| Ethion                           | M18-No28383     | NCP          | %     | 122      |           | 70-130     | Pass           |                    |
| Fenitrothion                     | M18-No28383     | NCP          | %     | 79       |           | 70-130     | Pass           |                    |
| Methyl parathion                 | M18-No28383     | NCP          | %     | 72       |           | 70-130     | Pass           |                    |
| Mevinphos                        | M18-No28383     | NCP          | %     | 88       |           | 70-130     | Pass           |                    |
| Spike - % Recovery               |                 |              |       | 1        | 1         | T          |                |                    |
| Polychlorinated Biphenyls        |                 |              |       | Result 1 |           |            |                |                    |
| Aroclor-1260                     | M18-No23231     | NCP          | %     | 75       |           | 70-130     | Pass           |                    |
| Spike - % Recovery               |                 |              |       | 1        | I I       |            |                |                    |
| Total Recoverable Hydrocarbons - | 1999 NEPM Fract | ions         |       | Result 1 |           |            |                |                    |
| TRH C6-C9                        | S18-No24236     | CP           | %     | 114      |           | 70-130     | Pass           |                    |
| TRH C10-C14                      | S18-No24236     | CP           | %     | 106      |           | 70-130     | Pass           |                    |
| Spike - % Recovery               |                 |              |       | 1        | 1         |            |                |                    |
| BTEX                             |                 |              |       | Result 1 |           |            |                |                    |
| Benzene                          | S18-No24236     | CP           | %     | 101      |           | 70-130     | Pass           |                    |
|                                  | S18-No24236     | CP           | %     | 108      |           | 70-130     | Pass           |                    |
| Ethylbenzene                     | S18-No24236     | CP           | %     | 119      |           | 70-130     | Pass           |                    |
| m&p-Xylenes                      | S18-No24236     | CP           | %     | 113      |           | 70-130     | Pass           |                    |
|                                  | S18-No24236     | CP           | %     | 112      |           | 70-130     | Pass           |                    |
| Xylenes - I otal                 | S18-No24236     | CP           | %     | 113      |           | 70-130     | Pass           |                    |
| Spike - % Recovery               |                 |              |       | D. 11    |           |            |                |                    |
| volatile Organics                |                 |              |       | Result 1 |           |            |                |                    |



| Test                             | Lab Sample ID   | QA<br>Source | Units | Result 1 |          |     | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|----------------------------------|-----------------|--------------|-------|----------|----------|-----|----------------------|----------------|--------------------|
| 1.1-Dichloroethene               | S18-No24236     | CP           | %     | 83       |          |     | 70-130               | Pass           |                    |
| 1.1.1-Trichloroethane            | S18-No24236     | CP           | %     | 99       |          |     | 70-130               | Pass           |                    |
| 1.2-Dichlorobenzene              | S18-No24236     | CP           | %     | 113      |          |     | 70-130               | Pass           |                    |
| 1.2-Dichloroethane               | S18-No24236     | CP           | %     | 98       |          |     | 70-130               | Pass           |                    |
| Trichloroethene                  | S18-No24236     | CP           | %     | 98       |          |     | 70-130               | Pass           |                    |
| Spike - % Recovery               |                 |              |       |          | 1        |     |                      |                |                    |
| Total Recoverable Hydrocarbons - | 2013 NEPM Fract | ions         |       | Result 1 |          |     |                      |                |                    |
| Naphthalene                      | S18-No24236     | CP           | %     | 94       |          |     | 70-130               | Pass           |                    |
| TRH C6-C10                       | S18-No24236     | CP           | %     | 108      |          |     | 70-130               | Pass           |                    |
| TRH >C10-C16                     | S18-No24236     | CP           | %     | 104      |          |     | 70-130               | Pass           |                    |
| Spike - % Recovery               |                 |              |       |          | 1        |     | 1                    |                |                    |
| Heavy Metals                     |                 | 1            |       | Result 1 |          |     |                      |                |                    |
| Arsenic                          | S18-No24236     | CP           | %     | 113      |          |     | 75-125               | Pass           |                    |
| Cadmium                          | S18-No24236     | CP           | %     | 112      |          |     | 75-125               | Pass           |                    |
| Chromium                         | S18-No24236     | CP           | %     | 117      |          |     | 75-125               | Pass           |                    |
| Copper                           | S18-No24236     | CP           | %     | 122      |          |     | 75-125               | Pass           |                    |
| Lead                             | S18-No24236     | CP           | %     | 113      |          |     | 75-125               | Pass           |                    |
| Mercury                          | S18-No24236     | CP           | %     | 91       |          |     | 70-130               | Pass           |                    |
| Nickel                           | S18-No24236     | CP           | %     | 118      |          |     | 75-125               | Pass           |                    |
| Zinc                             | S18-No24236     | CP           | %     | 110      |          |     | 75-125               | Pass           |                    |
| Test                             | Lab Sample ID   | QA<br>Source | Units | Result 1 |          |     | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
| Duplicate                        |                 |              |       |          |          |     |                      |                |                    |
| Organochlorine Pesticides        |                 |              |       | Result 1 | Result 2 | RPD |                      |                |                    |
| Chlordanes - Total               | Z18-No25216     | NCP          | mg/kg | < 0.1    | < 0.1    | <1  | 30%                  | Pass           |                    |
| 4.4'-DDD                         | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| 4.4'-DDE                         | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| 4.4'-DDT                         | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| a-BHC                            | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| Aldrin                           | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| b-BHC                            | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| d-BHC                            | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| Dieldrin                         | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| Endosulfan I                     | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| Endosulfan II                    | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| Endosulfan sulphate              | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| Endrin                           | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| Endrin aldehyde                  | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| Endrin ketone                    | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| g-BHC (Lindane)                  | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| Heptachlor                       | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| Heptachlor epoxide               | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| Hexachlorobenzene                | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| Methoxychlor                     | Z18-No25216     | NCP          | mg/kg | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| Toxaphene                        | Z18-No25216     | NCP          | mg/kg | < 1      | < 1      | <1  | 30%                  | Pass           |                    |
| Duplicate                        |                 |              |       |          |          |     | 1                    |                |                    |
| Polychlorinated Biphenyls        |                 | ,            |       | Result 1 | Result 2 | RPD |                      |                |                    |
| Aroclor-1016                     | Z18-No25216     | NCP          | mg/kg | < 0.1    | < 0.1    | <1  | 30%                  | Pass           |                    |
| Aroclor-1221                     | Z18-No25216     | NCP          | mg/kg | < 0.1    | < 0.1    | <1  | 30%                  | Pass           |                    |
| Aroclor-1232                     | Z18-No25216     | NCP          | mg/kg | < 0.1    | < 0.1    | <1  | 30%                  | Pass           |                    |
| Aroclor-1242                     | Z18-No25216     | NCP          | mg/kg | < 0.1    | < 0.1    | <1  | 30%                  | Pass           |                    |
| Aroclor-1248                     | Z18-No25216     | NCP          | mg/kg | < 0.1    | < 0.1    | <1  | 30%                  | Pass           |                    |
| Aroclor-1254                     | Z18-No25216     | NCP          | mg/kg | < 0.1    | < 0.1    | <1  | 30%                  | Pass           |                    |
| Aroclor-1260                     | Z18-No25216     | NCP          | mg/kg | < 0.1    | < 0.1    | <1  | 30%                  | Pass           |                    |
| Total PCB*                       | Z18-No25216     | NCP          | mg/kg | < 0.1    | < 0.1    | <1  | 30%                  | Pass           |                    |



| Duplicate                        |                 |      |       |          |          |     |     |      |  |
|----------------------------------|-----------------|------|-------|----------|----------|-----|-----|------|--|
|                                  |                 |      |       | Result 1 | Result 2 | RPD |     |      |  |
| % Moisture                       | S18-No24369     | NCP  | %     | 7.8      | 8.5      | 8.0 | 30% | Pass |  |
| Duplicate                        |                 |      | •     |          |          |     |     |      |  |
| Total Recoverable Hydrocarbons - | 1999 NEPM Fract | ions |       | Result 1 | Result 2 | RPD |     |      |  |
| TRH C6-C9                        | S18-No24234     | СР   | mg/kg | < 20     | < 20     | <1  | 30% | Pass |  |
| TRH C10-C14                      | S18-No24234     | CP   | mg/kg | < 20     | < 20     | <1  | 30% | Pass |  |
| TRH C15-C28                      | S18-No24234     | CP   | mg/kg | < 50     | < 50     | <1  | 30% | Pass |  |
| TRH C29-C36                      | S18-No24234     | CP   | mg/kg | < 50     | < 50     | <1  | 30% | Pass |  |
| Duplicate                        |                 |      |       |          |          |     |     |      |  |
| втех                             |                 |      |       | Result 1 | Result 2 | RPD |     |      |  |
| Benzene                          | S18-No24234     | CP   | mg/kg | < 0.1    | < 0.1    | <1  | 30% | Pass |  |
| Toluene                          | S18-No24234     | CP   | mg/kg | < 0.1    | < 0.1    | <1  | 30% | Pass |  |
| Ethylbenzene                     | S18-No24234     | CP   | mg/kg | < 0.1    | < 0.1    | <1  | 30% | Pass |  |
| m&p-Xylenes                      | S18-No24234     | CP   | mg/kg | < 0.2    | < 0.2    | <1  | 30% | Pass |  |
| o-Xylene                         | S18-No24234     | CP   | mg/kg | < 0.1    | < 0.1    | <1  | 30% | Pass |  |
| Xylenes - Total                  | S18-No24234     | CP   | mg/kg | < 0.3    | < 0.3    | <1  | 30% | Pass |  |
| Duplicate                        |                 |      |       |          |          |     |     |      |  |
| Volatile Organics                |                 |      |       | Result 1 | Result 2 | RPD |     |      |  |
| 1.1-Dichloroethane               | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 1.1-Dichloroethene               | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 1.1.1-Trichloroethane            | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 1.1.1.2-Tetrachloroethane        | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 1.1.2-Trichloroethane            | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 1.1.2.2-Tetrachloroethane        | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 1.2-Dibromoethane                | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 1.2-Dichlorobenzene              | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 1.2-Dichloroethane               | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 1.2-Dichloropropane              | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 1.2.3-Trichloropropane           | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 1.2.4-Trimethylbenzene           | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 1.3-Dichlorobenzene              | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 1.3-Dichloropropane              | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 1.3.5-Trimethylbenzene           | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 1.4-Dichlorobenzene              | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 2-Butanone (MEK)                 | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 2-Propanone (Acetone)            | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 4-Chlorotoluene                  | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| 4-Methyl-2-pentanone (MIBK)      | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| Allyl chloride                   | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| Bromobenzene                     | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| Bromochloromethane               | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| Bromodichloromethane             | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| Bromoform                        | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| Bromomethane                     | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| Carbon disulfide                 | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| Carbon Tetrachloride             | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| Chlorobenzene                    | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| Chloroethane                     | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| Chloroform                       | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| Chloromethane                    | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| cis-1.2-Dichloroethene           | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| cis-1.3-Dichloropropene          | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| Dibromochloromethane             | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| Dibromomethane                   | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |
| Dichlorodifluoromethane          | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30% | Pass |  |



| Duplicate                        |                 |      |       |          |          |     |      |       |  |
|----------------------------------|-----------------|------|-------|----------|----------|-----|------|-------|--|
| Volatile Organics                |                 |      |       | Result 1 | Result 2 | RPD |      |       |  |
| lodomethane                      | S18-No24234     | СР   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Isopropyl benzene (Cumene)       | S18-No24234     | СР   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Methylene Chloride               | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Styrene                          | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Tetrachloroethene                | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| trans-1.2-Dichloroethene         | S18-No24234     | СР   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| trans-1.3-Dichloropropene        | S18-No24234     | СР   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Trichloroethene                  | S18-No24234     | СР   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Trichlorofluoromethane           | S18-No24234     | СР   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Vinyl chloride                   | S18-No24234     | СР   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Duplicate                        |                 |      | 00    |          |          |     |      |       |  |
| Total Recoverable Hydrocarbons - | 2013 NEPM Fract | ions |       | Result 1 | Result 2 | RPD |      |       |  |
| Naphthalene                      | S18-No24234     | СР   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| TRH C6-C10                       | S18-No24234     | CP   | ma/ka | < 20     | < 20     | <1  | 30%  | Pass  |  |
| TRH >C10-C16                     | S18-No24234     | CP   | ma/ka | < 50     | < 50     | <1  | 30%  | Pass  |  |
| TRH >C16-C34                     | S18-No24234     | CP   | ma/ka | < 100    | < 100    | <1  | 30%  | Pass  |  |
| TRH >C34-C40                     | S18-No24234     | CP   | ma/ka | < 100    | < 100    | <1  | 30%  | Pass  |  |
| Duplicate                        | 01011021201     |      |       | 1100     | 1.00     | ••  | 0070 | 1 400 |  |
| Polycyclic Aromatic Hydrocarbons | ;               |      |       | Result 1 | Result 2 | RPD |      |       |  |
| Acenaphthene                     | S18-No24234     | СР   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Acenaphthylene                   | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Anthracene                       | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Benz(a)anthracene                | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Benzo(a)pyrene                   | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Benzo(b&j)fluoranthene           | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Benzo(g.h.i)perylene             | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Benzo(k)fluoranthene             | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Chrysene                         | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Dibenz(a.h)anthracene            | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Fluoranthene                     | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Fluorene                         | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Indeno(1.2.3-cd)pyrene           | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Naphthalene                      | S18-No24234     | СР   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Phenanthrene                     | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Pyrene                           | S18-No24234     | CP   | mg/kg | < 0.5    | < 0.5    | <1  | 30%  | Pass  |  |
| Duplicate                        |                 |      |       |          |          |     | _    |       |  |
| Organophosphorus Pesticides      |                 |      |       | Result 1 | Result 2 | RPD |      |       |  |
| Azinphos-methyl                  | S18-No24234     | CP   | mg/kg | < 0.2    | < 0.2    | <1  | 30%  | Pass  |  |
| Bolstar                          | S18-No24234     | CP   | mg/kg | < 0.2    | < 0.2    | <1  | 30%  | Pass  |  |
| Chlorfenvinphos                  | S18-No24234     | CP   | mg/kg | < 0.2    | < 0.2    | <1  | 30%  | Pass  |  |
| Chlorpyrifos                     | S18-No24234     | CP   | mg/kg | < 0.2    | < 0.2    | <1  | 30%  | Pass  |  |
| Chlorpyrifos-methyl              | S18-No24234     | CP   | mg/kg | < 0.2    | < 0.2    | <1  | 30%  | Pass  |  |
| Coumaphos                        | S18-No24234     | CP   | mg/kg | < 2      | < 2      | <1  | 30%  | Pass  |  |
| Demeton-S                        | S18-No24234     | CP   | mg/kg | < 0.2    | < 0.2    | <1  | 30%  | Pass  |  |
| Demeton-O                        | S18-No24234     | CP   | mg/kg | < 0.2    | < 0.2    | <1  | 30%  | Pass  |  |
| Diazinon                         | S18-No24234     | CP   | mg/kg | < 0.2    | < 0.2    | <1  | 30%  | Pass  |  |
| Dichlorvos                       | S18-No24234     | CP   | mg/kg | < 0.2    | < 0.2    | <1  | 30%  | Pass  |  |
| Dimethoate                       | S18-No24234     | CP   | mg/kg | < 0.2    | < 0.2    | <1  | 30%  | Pass  |  |
| Disulfoton                       | S18-No24234     | CP   | mg/kg | < 0.2    | < 0.2    | <1  | 30%  | Pass  |  |
| EPN                              | S18-No24234     | CP   | mg/kg | < 0.2    | < 0.2    | <1  | 30%  | Pass  |  |
| Ethion                           | S18-No24234     | CP   | mg/kg | < 0.2    | < 0.2    | <1  | 30%  | Pass  |  |
| Ethoprop                         | S18-No24234     | CP   | mg/kg | < 0.2    | < 0.2    | <1  | 30%  | Pass  |  |
| Ethyl parathion                  | S18-No24234     | CP   | mg/kg | < 0.2    | < 0.2    | <1  | 30%  | Pass  |  |
| Fenitrothion                     | S18-No24234     | CP   | mg/kg | < 0.2    | < 0.2    | <1  | 30%  | Pass  |  |



| Duplicate                        |             |    |          |          |          |      |     |      |  |
|----------------------------------|-------------|----|----------|----------|----------|------|-----|------|--|
| Organophosphorus Pesticides      |             |    |          | Result 1 | Result 2 | RPD  |     |      |  |
| Fensulfothion                    | S18-No24234 | CP | mg/kg    | < 0.2    | < 0.2    | <1   | 30% | Pass |  |
| Fenthion                         | S18-No24234 | CP | mg/kg    | < 0.2    | < 0.2    | <1   | 30% | Pass |  |
| Malathion                        | S18-No24234 | CP | mg/kg    | < 0.2    | < 0.2    | <1   | 30% | Pass |  |
| Merphos                          | S18-No24234 | CP | mg/kg    | < 0.2    | < 0.2    | <1   | 30% | Pass |  |
| Methyl parathion                 | S18-No24234 | CP | mg/kg    | < 0.2    | < 0.2    | <1   | 30% | Pass |  |
| Mevinphos                        | S18-No24234 | CP | mg/kg    | < 0.2    | < 0.2    | <1   | 30% | Pass |  |
| Monocrotophos                    | S18-No24234 | CP | mg/kg    | < 2      | < 2      | <1   | 30% | Pass |  |
| Naled                            | S18-No24234 | CP | mg/kg    | < 0.2    | < 0.2    | <1   | 30% | Pass |  |
| Omethoate                        | S18-No24234 | CP | mg/kg    | < 2      | < 2      | <1   | 30% | Pass |  |
| Phorate                          | S18-No24234 | CP | mg/kg    | < 0.2    | < 0.2    | <1   | 30% | Pass |  |
| Pirimiphos-methyl                | S18-No24234 | CP | mg/kg    | < 0.2    | < 0.2    | <1   | 30% | Pass |  |
| Pyrazophos                       | S18-No24234 | CP | mg/kg    | < 0.2    | < 0.2    | <1   | 30% | Pass |  |
| Ronnel                           | S18-No24234 | CP | mg/kg    | < 0.2    | < 0.2    | <1   | 30% | Pass |  |
| Terbufos                         | S18-No24234 | CP | mg/kg    | < 0.2    | < 0.2    | <1   | 30% | Pass |  |
| Tetrachlorvinphos                | S18-No24234 | CP | mg/kg    | < 0.2    | < 0.2    | <1   | 30% | Pass |  |
| Tokuthion                        | S18-No24234 | CP | mg/kg    | < 0.2    | < 0.2    | <1   | 30% | Pass |  |
| Trichloronate                    | S18-No24234 | CP | mg/kg    | < 0.2    | < 0.2    | <1   | 30% | Pass |  |
| Duplicate                        |             |    |          |          |          |      |     |      |  |
| Heavy Metals                     |             |    |          | Result 1 | Result 2 | RPD  |     |      |  |
| Arsenic                          | S18-No24234 | CP | mg/kg    | < 2      | < 2      | <1   | 30% | Pass |  |
| Cadmium                          | S18-No24234 | CP | mg/kg    | < 0.4    | < 0.4    | <1   | 30% | Pass |  |
| Chromium                         | S18-No24234 | CP | mg/kg    | < 5      | < 5      | <1   | 30% | Pass |  |
| Copper                           | S18-No24234 | CP | mg/kg    | < 5      | < 5      | <1   | 30% | Pass |  |
| Lead                             | S18-No24234 | CP | mg/kg    | 5.1      | < 5      | 12   | 30% | Pass |  |
| Mercury                          | S18-No24234 | CP | mg/kg    | < 0.1    | < 0.1    | <1   | 30% | Pass |  |
| Nickel                           | S18-No24234 | CP | mg/kg    | < 5      | < 5      | <1   | 30% | Pass |  |
| Zinc                             | S18-No24234 | CP | mg/kg    | 8.3      | 7.4      | 12   | 30% | Pass |  |
| Duplicate                        |             |    |          |          | <b></b>  |      |     | •    |  |
| Heavy Metals                     |             |    |          | Result 1 | Result 2 | RPD  |     |      |  |
| Arsenic                          | S18-No24236 | CP | mg/kg    | < 2      | < 2      | <1   | 30% | Pass |  |
| Cadmium                          | S18-No24236 | CP | mg/kg    | < 0.4    | < 0.4    | <1   | 30% | Pass |  |
| Chromium                         | S18-No24236 | CP | mg/kg    | < 5      | < 5      | <1   | 30% | Pass |  |
| Copper                           | S18-No24236 | CP | mg/kg    | < 5      | < 5      | <1   | 30% | Pass |  |
| Lead                             | S18-No24236 | CP | mg/kg    | < 5      | < 5      | <1   | 30% | Pass |  |
| Mercury                          | S18-No24236 | CP | mg/kg    | < 0.1    | < 0.1    | <1   | 30% | Pass |  |
| Nickel                           | S18-No24236 | CP | mg/kg    | < 5      | < 5      | <1   | 30% | Pass |  |
| Zinc                             | S18-No24236 | CP | mg/kg    | < 5      | < 5      | <1   | 30% | Pass |  |
| Duplicate                        |             |    |          |          |          |      |     | •    |  |
| Acid Sulfate Soils Field pH Test |             |    |          | Result 1 | Result 2 | RPD  |     |      |  |
| pH-F (Field pH test)*            | S18-No24248 | CP | pH Units | 7.8      | 7.8      | pass | 30% | Pass |  |
| Reaction Ratings*                | S18-No24248 | CP | comment  | 1.0      | 1.0      | pass | 30% | Pass |  |
| Duplicate                        |             |    |          |          |          |      |     |      |  |
| Acid Sulfate Soils Field pH Test |             |    |          | Result 1 | Result 2 | RPD  |     |      |  |
| pH-F (Field pH test)*            | S18-No24257 | CP | pH Units | 6.9      | 7.0      | pass | 30% | Pass |  |
| Reaction Ratings*                | S18-No24257 | CP | comment  | 4.0      | 4.0      | pass | 30% | Pass |  |



### Comments

Eurofins | mgt accreditation number 1261, corporate site 1254 is currently in progress of a controlled transition to a new custom built location at 6 Monterey Road, Dandenong South, Victoria 3175. All results on this report denoted as being performed by Eurofins | mgt 2-5 Kingston Town Close, Oakleigh Victoria 3166 corporate site 1254, will have been performed on either Oakleigh or new Dandenong South site.

| Sample Integrity  |     |
|---|-----|
| Custody Seals Intact (if used)  | N/A |
| Attempt to Chill was evident  | Yes |
| Sample correctly preserved  | Yes |
| Appropriate sample containers have been used                            | Yes |
| Sample containers for volatile analysis received with minimal headspace | Yes |
| Samples received within HoldingTime                                     | Yes |
| Some samples have been subcontracted                                    | No  |

### **Qualifier Codes/Comments**

Code Description

F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).

Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.

F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to N07 the total of the two co-eluting PAHs

R20 This sample is a Trip Spike and therefore all results are reported as a percentage

Field Screen uses the following fizz rating to classify the rate the samples reacted to the peroxide: 1.0; No reaction to slight. 2.0; Moderate reaction. 3.0; Strong reaction with persistent froth. 4.0; Extreme reaction.

### Authorised By

| Nibha Vaidya   | Analytical Services Manager   |
|----------------|-------------------------------|
| Chris Bennett  | Senior Analyst-Metal (VIC)    |
| Harry Bacalis  | Senior Analyst-Volatile (VIC) |
| Joseph Edouard | Senior Analyst-Organic (VIC)  |
| Myles Clark    | Senior Analyst-SPOCAS (QLD)   |
| Nibha Vaidya   | Senior Analyst-Asbestos (NSW) |

li falle

Glenn Jackson General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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### Certificate of Analysis



NATA Accredited Accreditation Number 1261 Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

### Cardno (NSW/ACT) Pty Ltd Level 9, 203 Pacific Highway St Leonards NSW 2065

| Attention:                                       | Ben Withnall  |
|--|---|
| Report   | 628416-AID  |
| Project Name                                     | KYEEMAGH INFANTS SCHOOL   |
| Project ID                                       | 80818157  |
| Received Date                                    | Nov 19, 2018  |
| Date Reported                                    | Nov 27, 2018  |
| Methodology:                                     |   |
| Asbestos Fibre<br>Identification                 | Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques.<br>NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.  |
| Unknown Mineral<br>Fibres                        | Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as<br>Electron Microscopy, to confirm unequivocal identity.<br>NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the<br>optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an<br>independent technique.  |
| Subsampling Soil<br>Samples                      | The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed.<br><i>NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.</i>  |
| Bonded asbestos-<br>containing material<br>(ACM) | The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination. The resultant material is then further examined in accordance with AS 4964 - 2004. NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.   |
| Limit of Reporting                               | The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk). NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos". This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH. |





Accredited for compliance with ISO/IEC 17025–Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Project NameKYEEMAGH INFANTS SCHOOLProject ID80818157Date SampledNov 17, 2018Report628416-AID

| Client Sample ID | Eurofins   mgt<br>Sample No. | Date Sampled | Sample Description  | Result   |
|------------------|------------------------------|--------------|---|--|
| TP13_0.1         | 18-No24227                   | Nov 17, 2018 | Approximate Sample 958g<br>Sample consisted of: Grey fine-grained sandy soil                    | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected.<br>No respirable fibres detected. |
| TP13_0.4         | 18-No24228                   | Nov 17, 2018 | Approximate Sample 810g<br>Sample consisted of: Grey fine-grained sandy soil and organic debris | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected.<br>No respirable fibres detected. |
| TP14_0.1         | 18-No24229                   | Nov 17, 2018 | Approximate Sample 729g<br>Sample consisted of: Grey fine-grained sandy soil and organic debris | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected.<br>No respirable fibres detected. |
| TP17_0.1         | 18-No24235                   | Nov 17, 2018 | Approximate Sample 705g<br>Sample consisted of: Grey fine-grained sandy soil and organic debris | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected.<br>No respirable fibres detected. |
| TP18_0.1         | 18-No24237                   | Nov 17, 2018 | Approximate Sample 686g<br>Sample consisted of: Grey fine-grained sandy soil                    | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected.<br>No respirable fibres detected. |
| TP20_0.1         | 18-No24239                   | Nov 17, 2018 | Approximate Sample 727g<br>Sample consisted of: Grey fine-grained sandy soil                    | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected.<br>No respirable fibres detected. |
| ASB2             | 18-No24241                   | Nov 17, 2018 | Approximate Sample 22g / 90x40x5mm<br>Sample consisted of: Grey fibre cement fragments          | Chrysotile, amosite and crocidolite asbestos detected.   |
| BH02_0.5         | 18-No24245                   | Nov 17, 2018 | Approximate Sample 553g<br>Sample consisted of: Grey fine-grained sandy soil                    | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected.<br>No respirable fibres detected. |





Accreditation Number 1261 Site Number 18217 Accredited for compliance with ISO/IEC 17025–Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

| Client Sample ID | Eurofins   mgt<br>Sample No. | Date Sampled | Sample Description  | Result   |
|------------------|------------------------------|--------------|---|--|
| BH03_0.5         | 18-No24247                   | Nov 17, 2018 | Approximate Sample 383g<br>Sample consisted of: Brown fine-grained sandy soil | No asbestos detected at the reporting limit of 0.001% w/w.*<br>Organic fibre detected.<br>No respirable fibres detected. |


### **Sample History**

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

| Description             | Testing Site | Extracted    | Holding Time |
|-------------------------|--------------|--------------|--------------|
| Asbestos - LTM-ASB-8020 | Sydney       | Nov 19, 2018 | Indefinite   |
| Asbestos - LTM-ASB-8020 | Sydney       | Nov 19, 2018 | Indefinite   |

| eurofins |     |
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| 3-5 K | ingston Town Close |
| Oakle | eigh VIC 3166      |
| Phon  | e:+61 3 8564 5000  |

NATA # 1261

Site # 1254 & 14271

**Sydney** Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217 
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 NATA # 1261 Site # 20794
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Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 NATA # 1261 Site # 23736

| Co<br>Ao<br>Pr | ompany Name:<br>Idress:<br>oiect Name: | Cardno (NS)<br>Level 9, 203<br>St Leonards<br>NSW 2065 | W/ACT) Pty L<br>Pacific Highw | id<br>vay |             |                        | Or<br>Re<br>Ph<br>Fa     | der N<br>port<br>ione:<br>x: | lo.:<br>#: | 6<br>0<br>0                    | 28416<br>29496<br>2 949 | 6<br>67700<br>9 390    | 2               |                               |             |                              |                       | R<br>D<br>P<br>C      | leceived:<br>Due:<br>Priority:<br>Contact Name: | Nov 19, 2018 2:52 PM<br>Nov 26, 2018<br>5 Day<br>Ben Withnall |
|----------------|--|--|-------------------------------|-----------|-------------|------------------------|--------------------------|------------------------------|------------|--------------------------------|-------------------------|------------------------|-----------------|-------------------------------|-------------|------------------------------|-----------------------|-----------------------|---|---|
| Pr             | oject ID:                              | 80818157   |                               |           |             |                        |                          |                              |            |                                |                         |                        |                 |                               |             |                              | Eur                   | ofins                 | mot Analvtical S                                | Services Manager : Nibha Vaidv                                |
|                |  |  |                               |           |             | Þ                      | Þ                        | I                            | I          | Þ                              | œ                       | ш                      | <               | 1                             | Z           | 1                            | ш                     | m                     |   |   |
| Sample Detail  |  |  |                               |           |             | bestos - WA guidelines | bestos Absence /Presence | DLD                          | DLD        | id Sulfate Soils Field pH Test | TEX                     | rofins   mgt Suite B15 | latile Organics | RH (after Silica Gel cleanup) | oisture Set | tal Recoverable Hydrocarbons | rofins   mgt Suite B7 | rofins   mgt Suite B8 |   |   |
| Mell           | oourne Laborato                        | ory - NATA Site  | # 1254 & 142                  | 271       |             |                        |                          | X                            | _          |                                |                         | Х                      | X               | Х                             | Х           | X                            | Х                     | Х                     |   |   |
| Syd            | ney Laboratory                         | - NATA Site # 1  | 8217                          |           |             | X                      | X                        |                              | <u> </u>   |                                | X                       |                        |                 |                               |             | X                            | X                     | X                     |   |   |
| Bris           | bane Laborator                         | y - NATA Site #  | 20794                         |           |             |                        |                          |                              | X          | X                              |                         |                        |                 |                               |             |                              |                       |                       |   |   |
| Pert           | h Laboratory - N                       | NATA Site # 237  | /36                           |           |             |                        |                          |                              | <u> </u>   |                                |                         |                        |                 |                               |             |                              |                       |                       |   |   |
| Exte           | Sample ID                              | Sample Date  | Sampling                      | Matrix    |             |                        |                          |                              | <u> </u>   |                                |                         |                        |                 |                               |             |                              |                       |                       |   |   |
|                | Sample ID                              | Sample Date  | Time                          | Wath      |             |                        |                          |                              |            |                                |                         |                        |                 |                               |             |                              |                       |                       |   |   |
| 1              | TP13_0.1                               | Nov 17, 2018   |                               | Soil      | S18-No24227 | Х                      |                          |                              | <u> </u>   |                                |                         | Х                      | X               |                               | Х           | ļ                            | X                     |                       |   |   |
| 2              | TP13_0.4                               | Nov 17, 2018   |                               | Soil      | S18-No24228 | X                      |                          |                              | _          |                                |                         |                        |                 | <b> </b>                      |             | ļ                            |                       |                       |   |   |
| 3              | TP14_0.1                               | Nov 17, 2018   |                               | Soil      | S18-No24229 | X                      |                          |                              | _          |                                |                         |                        |                 | <b> </b>                      |             | ļ                            |                       |                       |   |   |
| 4              | TP14_0.7                               | Nov 17, 2018   |                               | Soil      | S18-No24230 |                        |                          |                              | _          |                                |                         |                        |                 | ļ                             | X           | ļ                            |                       | X                     |   |   |
| 5              | TP15_0.1                               | Nov 17, 2018   |                               | Soil      | S18-No24231 |                        |                          |                              |            |                                |                         |                        |                 |                               | Х           | ļ                            | X                     |                       |   |   |
| 6              | TP15_0.6                               | Nov 17, 2018   |                               | Soil      | S18-No24232 |                        |                          |                              | _          |                                |                         | Х                      |                 |                               | Х           |                              |                       | Х                     |   |   |
| 7              | TP16_0.1                               | Nov 17, 2018   |                               | Soil      | S18-No24233 |                        |                          |                              | <u> </u>   |                                |                         |                        |                 |                               | Х           |                              | Х                     |                       |   |   |
| 8              | TP16_0.8                               | Nov 17, 2018   |                               | Soil      | S18-No24234 |                        |                          |                              | $\square$  |                                |                         |                        |                 |                               | Х           |                              |                       | Х                     |   |   |
| 9              | TP17_0.1                               | Nov 17, 2018   |                               | Soil      | S18-No24235 | Х                      |                          |                              |            |                                |                         |                        |                 |                               |             |                              |                       |                       |   |   |

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| F | hone: +61 3 8564 5000  |

NATA # 1261 Site # 1254 & 14271 **Sydney** Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217 **Brisbane** 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794 Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 NATA # 1261 Site # 23736

| Co<br>Ao | ompany Name:<br>Idress:  | Cardno (NSW/ACT) Pt<br>Level 9, 203 Pacific Hig<br>St Leonards<br>NSW 2065 | y Ltd<br>ghway        |             |   | Or<br>Re<br>Ph<br>Fa       | der N<br>port :<br>ione:<br>x: | lo.:<br>#: | 6<br>0<br>0                      | 28416<br>29496<br>2 949 | 6<br>67700<br>9 390      | 2                 |                                |              |                                |                         | R<br>D<br>P<br>C        | eceived:<br>ue:<br>riority:<br>contact Name: | Nov 19, 2018 2:52 PM<br>Nov 26, 2018<br>5 Day<br>Ben Withnall |
|----------|--------------------------|--|-----------------------|-------------|---|----------------------------|--------------------------------|------------|----------------------------------|-------------------------|--------------------------|-------------------|--------------------------------|--------------|--------------------------------|-------------------------|-------------------------|--|---|
| Pr<br>Pr | oject Name:<br>oject ID: | KYEEMAGH INFANTS<br>80818157   | SCHOOL                |             |   |                            |                                |            |                                  |                         |                          |                   |                                |              |                                | Eur                     | ofins                   | mgt Analytical S                             | Services Manager : Nibha Vaidya                               |
|          | Sample Detail            |  |                       |             |   | Asbestos Absence /Presence | НОГД                           | HOLD       | Acid Sulfate Soils Field pH Test | BTEX                    | Eurofins   mgt Suite B15 | Volatile Organics | TRH (after Silica Gel cleanup) | Moisture Set | Total Recoverable Hydrocarbons | Eurofins   mgt Suite B7 | Eurofins   mgt Suite B8 |  |   |
| Mell     | bourne Laborato          | ory - NATA Site # 1254 &   | 14271                 |             | X | X                          | X                              |            |                                  | V                       | X                        | X                 | X                              | X            | X                              | X                       | X                       |  |   |
| Syd      | hey Laboratory           | - NATA Site # 18217  |                       |             | ^ | ×                          |                                | ×          | x                                | ~                       |                          |                   |                                |              |                                | ^                       | ×                       |  |   |
| Port     | b Laboratory -           | y - NATA Sile # 20794  |                       |             |   |                            |                                |            |                                  |                         |                          |                   |                                |              |                                |                         |                         |  |   |
| 10       | TP17 0.5                 | Nov 17, 2018   | Soil                  | S18-No24236 |   |                            |                                |            |                                  |                         |                          |                   |                                | х            |                                |                         | х                       |  |   |
| 11       | TP18_0.1                 | Nov 17, 2018   | Soil                  | S18-No24237 | х |                            |                                |            |                                  |                         | х                        |                   |                                | х            |                                | х                       |                         |  |   |
| 12       | TP18_0.4                 | Nov 17, 2018   | Soil                  | S18-No24238 |   |                            |                                |            |                                  |                         |                          |                   |                                | Х            |                                |                         | Х                       |  |   |
| 13       | TP20_0.1                 | Nov 17, 2018   | Soil                  | S18-No24239 | Х |                            |                                |            |                                  |                         | Х                        |                   |                                | Х            |                                | Х                       |                         |  |   |
| 14       | QA300                    | Nov 17, 2018   | Soil                  | S18-No24240 |   |                            |                                |            |                                  |                         |                          |                   |                                | Х            |                                | Х                       |                         |  |   |
| 15       | ASB2                     | Nov 17, 2018   | Building<br>Materials | S18-No24241 |   | x                          |                                |            |                                  |                         |                          |                   |                                |              |                                |                         |                         |  |   |
| 16       | KYE_TB                   | Nov 17, 2018   | Soil                  | S18-No24242 |   |                            |                                |            |                                  | Х                       |                          |                   |                                |              |                                |                         |                         |  |   |
| 17       | KYE_TS                   | Nov 17, 2018   | Soil                  | S18-No24243 |   |                            |                                |            |                                  | Х                       |                          |                   |                                |              |                                |                         |                         |  |   |
| 18       | BH02_0.5                 | Nov 17, 2018   | Soil                  | S18-No24245 | Х |                            |                                |            |                                  |                         |                          |                   |                                | Х            |                                | X                       |                         |  |   |
| 19       | BH2_1.0                  | Nov 17, 2018   | Soil                  | S18-No24246 |   |                            |                                |            | <u> </u>                         |                         |                          |                   |                                | Х            |                                |                         | Х                       |  |   |
| 20       | BH03_0.5                 | Nov 17, 2018   | Soil                  | S18-No24247 | Х |                            |                                |            |                                  |                         |                          |                   |                                | Х            |                                | Х                       |                         |  |   |

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| Ph | ione : +61 3 8564 5000 |

NATA # 1261 Site # 1254 & 14271 **Sydney** Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217 Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794

Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 NATA # 1261 Site # 23736

|    | Company Name:<br>Address:<br>Project Name: | Cardno (NSV<br>Level 9, 203<br>St Leonards<br>NSW 2065<br>KYEEMAGH | V/ACT) Pty Ltd<br>Pacific Highwa<br>INFANTS SCH |            |             |                          | Or<br>Re<br>Ph<br>Fa       | der N<br>port i<br>one:<br>x: | lo.:<br>#: | 62<br>02<br>02                   | 28416<br>29496<br>2 9499 | ;<br>;7700<br>9 3902     | 2                 |                                |              |                                |                         | R<br>D<br>P<br>C        | eceived:<br>ue:<br>riority:<br>ontact Name: | No <sup>v</sup><br>Nov<br>5 D<br>Bei | v 19, 2018 2<br>v 26, 2018<br>9ay<br>n Withnall | :52 PM  |        |
|----|--|--|---|------------|-------------|--------------------------|----------------------------|-------------------------------|------------|----------------------------------|--------------------------|--------------------------|-------------------|--------------------------------|--------------|--------------------------------|-------------------------|-------------------------|---|--------------------------------------|---|---------|--------|
|    | Project ID:                                | 80818157   |   |            |             |                          |                            |                               |            |                                  |                          |                          |                   |                                |              |                                | Euro                    | ofins                   | mgt Analytical                              | Service                              | es Manager                                      | : Nibha | Vaidya |
|    |  | Sa   | mple Detail                                     |            |             | Asbestos - WA guidelines | Asbestos Absence /Presence | НОГД                          | HOLD       | Acid Sulfate Soils Field pH Test | BTEX                     | Eurofins   mgt Suite B15 | Volatile Organics | TRH (after Silica Gel cleanup) | Moisture Set | Total Recoverable Hydrocarbons | Eurofins   mgt Suite B7 | Eurofins   mgt Suite B8 |   |                                      |   |         |        |
| M  | elbourne Laborato                          | ry - NATA Site   | <u># 1254 &amp; 1427</u>                        | <b>'</b> 1 |             | V                        | ×                          | X                             |            |                                  | v                        | Х                        | Х                 | X                              | Х            | X                              | X                       | X                       |   |                                      |   |         |        |
| 5  | /dney Laboratory -                         |  | 8217<br>20704                                   |            |             | ×                        | ×                          |                               | x          | x                                | ×                        |                          |                   |                                |              |                                | ×                       | ×                       |   |                                      |   |         |        |
| P  | with Laboratory - N                        | ATA Site # 237   | <u>20754</u><br>36                              |            |             |                          |                            |                               | ~          |                                  |                          |                          |                   |                                |              |                                |                         |                         |   |                                      |   |         |        |
| 21 | BH02 2.0-2.45                              | Nov 17, 2018   | 55  | Soil       | S18-No24248 |                          |                            |                               |            | х                                |                          |                          |                   |                                |              |                                |                         |                         |   |                                      |   |         |        |
| 22 | 2 BH02_4.0-4.45                            | Nov 17, 2018   | 5   | Soil       | S18-No24249 |                          |                            |                               |            | х                                |                          |                          |                   |                                |              |                                |                         |                         |   |                                      |   |         |        |
| 23 | BH02_5.5-5.95                              | Nov 17, 2018   | 5   | Soil       | S18-No24250 |                          |                            |                               |            | Х                                |                          |                          |                   |                                |              |                                |                         |                         |   |                                      |   |         |        |
| 24 | BH02_7.0-7.45                              | Nov 17, 2018   |   | Soil       | S18-No24251 |                          |                            |                               |            | Х                                |                          |                          |                   |                                |              |                                |                         |                         |   |                                      |   |         |        |
| 25 | 6 BH02_8.5-8.95                            | Nov 17, 2018   |   | Soil       | S18-No24252 |                          |                            |                               |            | Х                                |                          |                          |                   |                                |              |                                |                         |                         |   |                                      |   |         |        |
| 26 | 6 BH02_10.0-<br>10.45                      | Nov 17, 2018   | 5   | Soil       | S18-No24253 |                          |                            |                               |            | х                                |                          |                          |                   |                                |              |                                |                         |                         |   |                                      |   |         |        |
| 27 | ' BH02_11.5-<br>11.95                      | Nov 17, 2018   |   | Soil       | S18-No24254 |                          |                            |                               |            | х                                |                          |                          |                   |                                |              |                                |                         |                         |   |                                      |   |         |        |
| 28 | BH02_13.0-<br>13.45                        | Nov 17, 2018   |   | Soil       | S18-No24255 |                          |                            |                               |            | х                                |                          |                          |                   |                                |              |                                |                         |                         |   |                                      |   |         |        |
| 29 | BH02_14.5-<br>14.95                        | Nov 17, 2018   | 5   | Soil       | S18-No24256 |                          |                            |                               |            | х                                |                          |                          |                   |                                |              |                                |                         |                         |   |                                      |   |         |        |

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| Melbourne               |
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| Oakleigh VIC 3166       |
| Phone : +61 3 8564 5000 |

Site # 1254 & 14271

NATA # 1261

Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217 Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794 Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 NATA # 1261 Site # 23736

| Co<br>Ad<br>Pr | ompany Name:<br>Idress:<br>oject Name: | Cardno (NS\<br>Level 9, 203<br>St Leonards<br>NSW 2065<br>KYEEMAGH |                            |      | Or<br>Re<br>Ph<br>Fa | der N<br>eport #<br>ione:<br>ix: | lo.:<br>#: | 62<br>02<br>02           | 28416<br>29496<br>2 9499 | 6<br>67700<br>9 390:           | 2            |                                |                         |                         |      | R<br>D<br>P<br>C | leceived:<br>Jue:<br>Iriority:<br>contact Name: | Nov 19, 2<br>Nov 26, 2<br>5 Day<br>Ben Withr | 018 2:52 PM<br>018<br>nall | 1        |  |  |
|----------------|--|--|----------------------------|------|----------------------|----------------------------------|------------|--------------------------|--------------------------|--------------------------------|--------------|--------------------------------|-------------------------|-------------------------|------|------------------|---|--|----------------------------|----------|--|--|
| Pr             | oject ID:                              | 80818157   |                            |      |                      |                                  |            |                          |                          |                                |              |                                |                         |                         | Euro | ofins            | mgt Analytical                                  | Services Mar                                 | nager : Nibh               | a Vaidya |  |  |
|                |  | Asbestos - WA guidelines   | Asbestos Absence /Presence | HOLD | НОГД                 | Acid Sulfate Soils Field pH Test | BTEX       | Eurofins   mgt Suite B15 | Volatile Organics        | TRH (after Silica Gel cleanup) | Moisture Set | Total Recoverable Hydrocarbons | Eurofins   mgt Suite B7 | Eurofins   mgt Suite B8 |      |                  |   |  |                            |          |  |  |
| Melk           | ourne Laborato                         | ory - NATA Site  | # 1254 & 1427              | 1    |                      |                                  |            | Х                        |                          |                                |              | Х                              | Х                       | Х                       | Х    | Х                | Х   | Х  |                            |          |  |  |
| Syd            | ney Laboratory                         | NATA Site # 1  | 8217                       |      |                      | X                                | X          |                          |                          |                                | Х            |                                |                         |                         |      | X                | Х   | Х  |                            |          |  |  |
| Bris           | bane Laboratory                        | / - NATA Site #  | 20794                      |      |                      |                                  |            |                          | X                        | X                              |              |                                |                         |                         |      |                  |   |  |                            |          |  |  |
| 20             | RH02 16 0                              | Nov 17 2018  | 30                         | Soil | S18 No24257          |                                  |            |                          |                          |                                |              |                                |                         |                         |      |                  |   |  |                            |          |  |  |
| 30             | 16.45                                  | 100 17, 2018   |                            |      | 310-11024237         |                                  |            |                          |                          | Х                              |              |                                |                         |                         |      |                  |   |  |                            |          |  |  |
| 31             | BH02_17.5-<br>17.95                    | Nov 17, 2018   | S                          | Soil | S18-No24258          |                                  |            |                          |                          | x                              |              |                                |                         |                         |      |                  |   |  |                            |          |  |  |
| 32             | BH03_1.0-1.1                           | Nov 17, 2018   | 5                          | Soil | S18-No24259          |                                  |            |                          |                          | х                              |              |                                |                         |                         |      |                  |   |  |                            |          |  |  |
| 33             | BH03_2.5-2.95                          | Nov 17, 2018   | 5                          | Soil | S18-No24260          |                                  |            |                          |                          | Х                              |              |                                |                         |                         |      |                  |   |  |                            |          |  |  |
| 34             | BH03_4.0-4.45                          | Nov 17, 2018   | 5                          | Soil | S18-No24261          |                                  |            |                          |                          | Х                              |              |                                |                         |                         |      |                  |   |  |                            |          |  |  |
| 35             | BH03_5.5-5.95                          | Nov 17, 2018   | 5                          | Soil | S18-No24262          |                                  |            |                          |                          | Х                              |              |                                |                         |                         |      |                  |   |  |                            |          |  |  |
| 36             | BH03_7.0-7.45                          | Nov 17, 2018   | 5                          | Soil | S18-No24263          |                                  | <b> </b>   |                          |                          | X                              |              |                                |                         |                         |      |                  |   |  |                            |          |  |  |
| 37             | BH03_8.5-8.95                          | Nov 17, 2018   | 5                          | Soil | S18-No24264          |                                  | <u> </u>   |                          |                          | Х                              |              |                                |                         |                         |      |                  |   |  |                            |          |  |  |
| 38             | BH03_10.0-<br>10.45                    | Nov 17, 2018   | S                          | Soil | S18-No24265          |                                  |            |                          |                          | x                              |              |                                |                         |                         |      |                  |   |  |                            |          |  |  |
| 39             | BH03_11.5-                             | Nov 17, 2018   | S                          | Soil | S18-No24266          |                                  |            |                          |                          | х                              |              |                                |                         |                         |      |                  |   |  |                            |          |  |  |



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S18-No24271

Svdnev Laboratory - NATA Site # 18217

Brisbane Laboratory - NATA Site # 20794

Nov 17, 2018

Nov 17, 2018

Nov 17, 2018

Nov 17, 2018

Nov 17, 2018

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Water

Water

Perth Laboratory - NATA Site # 23736

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BH03\_13.0-

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**Test Counts** 

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Perth

Site # 23736



#### Internal Quality Control Review and Glossary General

#### 1. QC data may be available on request.

- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. Samples were analysed on an 'as received' basis.
- 4. This report replaces any interim results previously issued.

#### **Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

mgt

#### Units

| % w/w: weight for weight b | pasis   | grams per kilogram  |
|----------------------------|---|---|
| Filter loading:            |   | fibres/100 graticule areas  |
| Reported Concentration:    |   | fibres/mL   |
| Flowrate:                  |   | L/min   |
| Terms                      |   |   |
| Dry                        | Sample is dried by heating prior to analysis  |   |
| LOR                        | Limit of Reporting  |   |
| COC                        | Chain of Custody  |   |
| SRA                        | Sample Receipt Advice   |   |
| ISO                        | International Standards Organisation  |   |
| AS                         | Australian Standards  |   |
| WA DOH                     | Reference document for the NEPM. Government of Western Austr<br>Sites in Western Australia (2009), including supporting document F      | alia, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated<br>Recommended Procedures for Laboratory Analysis of Asbestos in Soil (2011) |
| NEPM                       | National Environment Protection (Assessment of Site Contamination   | on) Measure, 2013 (as amended)  |
| ACM                        | Asbestos Containing Materials. Asbestos contained within a non-a:<br>NEPM, ACM is generally restricted to those materials that do not p | sbestos matrix, typically presented in bonded and/or sound condition. For the purposes of the<br>ass a 7mm x 7mm sieve.   |
| AF                         | Asbestos Fines. Asbestos containing materials, including friable, w equivalent to "non-bonded / friable".                               | eathered and bonded materials, able to pass a 7mm x 7mm sieve. Considered under the NEPM as   |
| FA                         | Fibrous Asbestos. Asbestos containing materials in a friable and/or<br>materials that do not pass a 7mm x 7mm sieve.                    | severely weathered condition. For the purposes of the NEPM, FA is generally restricted to those   |
| Friable                    | Asbestos-containing materials of any size that may be broken or cr<br>outside of the laboratory's remit to assess degree of friability. | umbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is  |
| Trace Analysis             | Analytical procedure used to detect the presence of respirable fibre  | es in the matrix.   |



# l mgt

#### Comments

No24247: Sample received was less than the nominal 500mL as recommended in Section 4.10 of the NEPM Schedule B1 - Guideline on Investigation Levels for Soil and Groundwater.

Eurofins | mgt accreditation number 1261, corporate site 1254 is currently in progress of a controlled transition to a new custom built location at 6 Monterey Road, Dandenong South, Victoria 3175. All results on this report denoted as being performed by Eurofins | mgt 2-5 Kingston Town Close, Oakleigh Victoria 3166 corporate site 1254, will have been performed on either Oakleigh or new Dandenong South site.

#### Sample Integrity

| Custody Seals Intact (if used)  | N/A |
|---|-----|
| Attempt to Chill was evident  | Yes |
| Sample correctly preserved  | Yes |
| Appropriate sample containers have been used                            | Yes |
| Sample containers for volatile analysis received with minimal headspace | Yes |
| Samples received within HoldingTime                                     | Yes |
| Some samples have been subcontracted                                    | No  |
|   |     |

#### **Qualifier Codes/Comments**

| Code | Description    |
|------|----------------|
| N/A  | Not applicable |

#### Asbestos Counter/Identifier:

#### Authorised by:

Sayeed Abu

Senior Analyst-Asbestos (NSW)

Glenn Jackson General Manager

Final Report - this report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.





### Certificate of Analysis

Cardno (NSW/ACT) Pty Ltd Level 9, 203 Pacific Highway St Leonards NSW 2065



NATA Accredited Accreditation Number 1261 Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

#### Attention:

Ben Withnall

Report Project name Project ID Received Date 628416-W KYEEMAGH INFANTS SCHOOL 80818157 Nov 19, 2018

| Client Sample ID                                |       |       | KYE GUM      | KYE RIN      |
|---|-------|-------|--------------|--------------|
| Sample Matrix                                   |       |       | Water        | Water        |
| Eurofins I mgt Sample No.                       |       |       | S18-No24269  | S18-No24271  |
| Date Sampled                                    |       |       | Nov 17, 2018 | Nov 17, 2018 |
| Test/Poforonoo                                  |       | Linit |              | 100 17, 2010 |
| Test/Relefence                                  | LUR   | Unit  |              |              |
| TOLA RECOVERABLE HYDROCARDONS - 1999 NEFW FIACT |       |       | .0.02        | . 0.02       |
|   | 0.02  | mg/L  | < 0.02       | < 0.02       |
|   | 0.05  | mg/L  | < 0.05       | < 0.05       |
| TRH C15-C28                                     | 0.1   | mg/L  | < 0.1        | < 0.1        |
| TRH C29-C36                                     | 0.1   | mg/∟  | < 0.1        | < 0.1        |
| Veletile Organice                               | 0.1   | mg/L  | < 0.1        | < 0.1        |
|   |       |       |              |              |
| 1.1-Dichloroethane                              | 0.001 | mg/L  | -            | < 0.001      |
| 1.1-Dichloroethene                              | 0.001 | mg/L  | -            | < 0.001      |
| 1.1.1-Trichloroethane                           | 0.001 | mg/L  | -            | < 0.001      |
| 1.1.1.2-Tetrachloroethane                       | 0.001 | mg/L  | -            | < 0.001      |
| 1.1.2-Trichloroethane                           | 0.001 | mg/L  | -            | < 0.001      |
| 1.1.2.2-Tetrachloroethane                       | 0.001 | mg/L  | -            | < 0.001      |
| 1.2-Dibromoethane                               | 0.001 | mg/L  | -            | < 0.001      |
| 1.2-Dichlorobenzene                             | 0.001 | mg/L  | -            | < 0.001      |
| 1.2-Dichloroethane                              | 0.001 | mg/L  | -            | < 0.001      |
| 1.2-Dichloropropane                             | 0.001 | mg/L  | -            | < 0.001      |
| 1.2.3-Trichloropropane                          | 0.001 | mg/L  | -            | < 0.001      |
| 1.2.4-Trimethylbenzene                          | 0.001 | mg/L  | -            | < 0.001      |
| 1.3-Dichlorobenzene                             | 0.001 | mg/L  | -            | < 0.001      |
| 1.3-Dichloropropane                             | 0.001 | mg/L  | -            | < 0.001      |
| 1.3.5-Trimethylbenzene                          | 0.001 | mg/L  | -            | < 0.001      |
| 1.4-Dichlorobenzene                             | 0.001 | mg/L  | -            | < 0.001      |
| 2-Butanone (MEK)                                | 0.001 | mg/L  | -            | < 0.001      |
| 2-Propanone (Acetone)                           | 0.001 | mg/L  | -            | < 0.001      |
| 4-Chlorotoluene                                 | 0.001 | mg/L  | -            | < 0.001      |
| 4-Methyl-2-pentanone (MIBK)                     | 0.001 | mg/L  | -            | < 0.001      |
| Allyl chloride                                  | 0.001 | mg/L  | -            | < 0.001      |
| Benzene   | 0.001 | mg/L  | -            | < 0.001      |
| Bromobenzene                                    | 0.001 | mg/L  | -            | < 0.001      |
| Bromochloromethane                              | 0.001 | mg/L  | -            | < 0.001      |
| Bromodichloromethane                            | 0.001 | mg/L  | -            | < 0.001      |
| Bromoform                                       | 0.001 | mg/L  | -            | < 0.001      |
| Bromomethane                                    | 0.001 | mg/L  | -            | < 0.001      |
| Carbon disulfide                                | 0.001 | mg/L  | -            | < 0.001      |
| Carbon Tetrachloride                            | 0.001 | mg/L  | -            | < 0.001      |



| Client Sample ID                                  |       |       | KYE_GUM      | KYE_RIN      |
|---|-------|-------|--------------|--------------|
| Sample Matrix                                     |       |       | Water        | Water        |
| Eurofins   mgt Sample No.                         |       |       | S18-No24269  | S18-No24271  |
| Date Sampled                                      |       |       | Nov 17, 2018 | Nov 17 2018  |
| Toot/Poforonoo                                    |       | Linit |              | 100 11, 2010 |
| Volatilo Organice                                 | LUK   | Unit  |              |              |
| Chlarabanzana                                     | 0.001 |       |              | . 0.001      |
| Chloropenzene                                     | 0.001 | mg/L  | -            | < 0.001      |
| Chloroform  | 0.001 | mg/L  | -            | < 0.001      |
| Chloromothono                                     | 0.005 | mg/L  | -            | < 0.005      |
| chiofomethane                                     | 0.001 | mg/L  | -            | < 0.001      |
|   | 0.001 | mg/L  | -            | < 0.001      |
|   | 0.001 | mg/L  | -            | < 0.001      |
| Dibromomethane                                    | 0.001 | mg/L  | -            | < 0.001      |
| Diblomotifueromothano                             | 0.001 | mg/L  | -            | < 0.001      |
| Ethylbonzono                                      | 0.001 | mg/L  | -            | < 0.001      |
|   | 0.001 | mg/L  | -            | < 0.001      |
|   | 0.001 | mg/L  | -            | < 0.001      |
| m&n-Xylenes                                       | 0.001 | mg/L  | _            | < 0.001      |
| Methylene Chloride                                | 0.002 | mg/L  | _            | < 0.002      |
|   | 0.001 | mg/L  | _            | < 0.001      |
| Styrene   | 0.001 | mg/L  |              | < 0.001      |
| Tetrachloroethene                                 | 0.001 | mg/L  |              | < 0.001      |
| Toluene   | 0.001 | mg/L  | _            | < 0.001      |
| trans-1 2-Dichloroethene                          | 0.001 | mg/L  | _            | < 0.001      |
| trans-1.3-Dichloropropene                         | 0.001 | mg/L  | _            | < 0.001      |
|   | 0.001 | mg/L  | _            | < 0.001      |
| Trichlorofluoromethane                            | 0.001 | mg/L  | _            | < 0.001      |
| Vinyl chloride                                    | 0.001 | mg/L  | _            | < 0.001      |
| Xylenes - Total                                   | 0.001 | mg/L  | _            | < 0.001      |
| Total MAH*  | 0.000 | mg/L  | _            | < 0.000      |
| Vic EPA IWRG 621 CHC (Total)*                     | 0.005 | mg/L  | _            | < 0.005      |
| Vic EPA IWRG 621 Other CHC (Total)*               | 0.005 | mg/L  | _            | < 0.005      |
| 4-Bromofluorobenzene (surr.)                      | 1     | %     | -            | 109          |
| Toluene-d8 (surr.)                                | 1     | %     | _            | 115          |
| Total Recoverable Hydrocarbons - 2013 NEPM Fract  | ions  | ,,,   |              |              |
| Naphthalene <sup>N02</sup>                        | 0.01  | ma/l  | < 0.01       | < 0.01       |
| TRH C6-C10  | 0.02  | ma/l  | < 0.02       | < 0.02       |
| TRH C6-C10 less BTEX (E1) <sup>N04</sup>          | 0.02  | mg/L  | < 0.02       | < 0.02       |
| TRH >C10-C16                                      | 0.05  | ma/l  | < 0.05       | < 0.02       |
| TRH >C10-C16 less Naphthalene (E2) <sup>N01</sup> | 0.05  | ma/l  | < 0.05       | < 0.05       |
| TRH >C16-C34                                      | 0.1   | ma/L  | < 0.1        | < 0.1        |
| TRH >C34-C40                                      | 0.1   | ma/L  | < 0.1        | < 0.1        |
| TRH >C10-C40 (total)*                             | 0.1   | ma/L  | < 0.1        | < 0.1        |
| Polycyclic Aromatic Hydrocarbons                  |       |       |              | _            |
| Acenaphthene                                      | 0.001 | ma/l  | -            | < 0.001      |
| Acenaphthylene                                    | 0.001 | ma/l  | -            | < 0.001      |
| Anthracene  | 0.001 | ma/L  | -            | < 0.001      |
| Benz(a)anthracene                                 | 0.001 | ma/L  | -            | < 0.001      |
| Benzo(a)pyrene                                    | 0.001 | ma/L  | -            | < 0.001      |
| Benzo(b&j)fluoranthene <sup>N07</sup>             | 0.001 | ma/L  | -            | < 0.001      |
| Benzo(q.h.i)perylene                              | 0.001 | ma/L  | -            | < 0.001      |
| Benzo(k)fluoranthene                              | 0.001 | ma/L  | -            | < 0.001      |
| Chrysene  | 0.001 | ma/L  | -            | < 0.001      |
| Dibenz(a.h)anthracene                             | 0.001 | mg/L  |              | < 0.001      |



| Client Sample ID                                     |        |      | KYE_GUM      | KYE_RIN      |
|--|--------|------|--------------|--------------|
| Sample Matrix  |        |      | Water        | Water        |
| Eurofins   mgt Sample No.                            |        |      | S18-No24269  | S18-No24271  |
| Date Sampled   |        |      | Nov 17, 2018 | Nov 17, 2018 |
| Test/Reference                                       | LOR    | Unit |              |              |
| Polycyclic Aromatic Hydrocarbons                     |        |      |              |              |
| Fluoranthene   | 0.001  | mg/L | -            | < 0.001      |
| Fluorene   | 0.001  | mg/L | -            | < 0.001      |
| Indeno(1.2.3-cd)pyrene                               | 0.001  | mg/L | -            | < 0.001      |
| Naphthalene  | 0.001  | mg/L | -            | < 0.001      |
| Phenanthrene   | 0.001  | mg/L | -            | < 0.001      |
| Pyrene   | 0.001  | mg/L | -            | < 0.001      |
| Total PAH*   | 0.001  | mg/L | -            | < 0.001      |
| 2-Fluorobiphenyl (surr.)                             | 1      | %    | -            | 79           |
| p-Terphenyl-d14 (surr.)                              | 1      | %    | -            | 55           |
| TRH - 2013 NEPM Fractions (after silica gel clean-up | )      |      |              |              |
| TRH >C10-C16 (after silica gel clean-up)             | 0.05   | mg/L | < 0.05       | -            |
| TRH >C16-C34 (after silica gel clean-up)             | 0.1    | mg/L | < 0.1        | -            |
| TRH >C34-C40 (after silica gel clean-up)             | 0.1    | mg/L | < 0.1        | -            |
| TRH - 1999 NEPM Fractions (after silica gel clean-up | )      |      |              |              |
| TRH C10-C36 (Total) (after silica gel clean-up)      | 0.1    | mg/L | < 0.1        | -            |
| TRH C10-C14 (after silica gel clean-up)              | 0.05   | mg/L | < 0.05       | -            |
| TRH C15-C28 (after silica gel clean-up)              | 0.1    | mg/L | < 0.1        | -            |
| TRH C29-C36 (after silica gel clean-up)              | 0.1    | mg/L | < 0.1        | -            |
| Heavy Metals   |        |      |              |              |
| Arsenic  | 0.001  | mg/L | -            | < 0.001      |
| Cadmium  | 0.0002 | mg/L | -            | < 0.0002     |
| Chromium   | 0.001  | mg/L | -            | < 0.001      |
| Copper   | 0.001  | mg/L | -            | < 0.001      |
| Lead   | 0.001  | mg/L | -            | < 0.001      |
| Mercury  | 0.0001 | mg/L | -            | < 0.0001     |
| Nickel   | 0.001  | mg/L | -            | < 0.001      |
| Zinc   | 0.005  | mg/L | -            | < 0.005      |



### Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

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| Description  | Testing Site | Extracted    | Holding Time |
|--|--------------|--------------|--------------|
| Eurofins   mgt Suite B8  |              |              |              |
| Total Recoverable Hydrocarbons - 1999 NEPM Fractions                   | Melbourne    | Nov 21, 2018 | 7 Day        |
| - Method: LTM-ORG-2010 TRH C6-C40                                      |              |              |              |
| Volatile Organics  | Melbourne    | Nov 21, 2018 | 7 Days       |
| - Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices |              |              |              |
| Total Recoverable Hydrocarbons - 2013 NEPM Fractions                   | Melbourne    | Nov 21, 2018 | 7 Day        |
| - Method: LTM-ORG-2010 TRH C6-C40                                      |              |              |              |
| Total Recoverable Hydrocarbons - 2013 NEPM Fractions                   | Melbourne    | Nov 21, 2018 | 7 Day        |
| - Method: LTM-ORG-2010 TRH C6-C40                                      |              |              |              |
| Polycyclic Aromatic Hydrocarbons                                       | Melbourne    | Nov 21, 2018 | 7 Day        |
| - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water               |              |              |              |
| Metals M8  | Melbourne    | Nov 21, 2018 | 28 Days      |
| - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS   |              |              |              |
| TRH - 2013 NEPM Fractions (after silica gel clean-up)                  | Melbourne    | Nov 26, 2018 | 7 Day        |
| - Method: LTM-ORG-2010 TRH C6-C40                                      |              |              |              |
| TRH - 1999 NEPM Fractions (after silica gel clean-up)                  | Melbourne    | Nov 26, 2018 | 7 Day        |
| - Method: TRH C6-C36 (Silica Gel Cleanup) - MGT 100A                   |              |              |              |

|            | 🔅 eur                                  | ABN– 50 005 (<br>e.mail : Enviro'<br>web : www.eur     | 085 521<br>Sales@<br>ofins.cc | eurofins<br>om.au          | s.com                | <b>M</b><br>20<br>P<br>N<br>S | lelbourn<br>-5 Kings<br>akleigh<br>hone : +<br>ATA # 1<br>ite # 12 | ne<br>ston Tov<br>VIC 31<br>⊦61 3 85<br>1261<br>54 & 14 | vn Clos<br>66<br>664 500<br>271 | e<br>0              | Syd<br>Unit<br>16 N<br>Lan<br>Pho<br>NAT | Iney<br>t F3, Bu<br>Mars Ro<br>be Cove<br>one : +6<br>TA # 12 | ilding F<br>bad<br>West N<br>1 2 990<br>61 Site | -<br>NSW 20<br>00 8400<br># 1821 | 66<br>7                 | Brisbane<br>1/21 Smallwood Place<br>Murarrie QLD 4172<br>Phone : +61 7 3902 4600<br>NATA # 1261 Site # 2070 | Perth<br>2/91 Leach Highway<br>Kewdale WA 6105<br>0 Phone: +61 8 9251 9600<br>94 NATA # 1261<br>Site # 23736 |   |   |  |
|------------|--|--|-------------------------------|----------------------------|----------------------|-------------------------------|--|---|---------------------------------|---------------------|--|---|---|----------------------------------|-------------------------|---|--|---|---|--|
| Co<br>Ad   | ompany Name:<br>Idress:                | Cardno (NS)<br>Level 9, 203<br>St Leonards<br>NSW 2065 |                               |                            | Or<br>Re<br>Ph<br>Fa | der N<br>port #<br>one:<br>x: | o.:<br>#:  | 62<br>02<br>02  | 28416<br>29496<br>2 949         | 5<br>57700<br>9 390 | 2  |   |   |                                  |                         | F<br>C<br>F<br>C  | Received:<br>Due:<br>Priority:<br>Contact Name:  | Nov 19, 2018 2:52 PM<br>Nov 26, 2018<br>5 Day<br>Ben Withnall |   |  |
| Pro<br>Pro | oject Name:<br>oject ID:               |  |                               |                            |                      |                               |  |   |                                 |                     |  |   |   | Euro                             | ofins                   | mgt Analytical Se   | rvices Manager : Nibha Vaidya  |   |   |  |
|            |  |  | Asbestos - WA guidelines      | Asbestos Absence /Presence | НОГД                 | HOLD                          | Acid Sulfate Soils Field pH Test                                   | BTEX  | Eurofins   mgt Suite B15        | Volatile Organics   | TRH (after Silica Gel cleanup)           | Moisture Set  | Total Recoverable Hydrocarbons                  | Eurofins   mgt Suite B7          | Eurofins   mgt Suite B8 |   |  |   |   |  |
| Melk       | ourne Laborato                         | ory - NATA Site  | # 1254 & 142                  | 271                        |                      |                               |  | х   |                                 |                     |  | х   | х   | Х                                | х                       | х   | Х  | х   |   |  |
| Sydi       | ney Laboratory                         | - NATA Site # 1  | 8217                          |                            |                      | х                             | х  |   |                                 |                     | Х  |   |   |                                  |                         | x   | Х  | Х   | - |  |
| Bris       | bane Laborator                         | y - NATA Site #  | 20794                         |                            |                      |                               |  |   | Х                               | Х                   |  |   |   |                                  |                         |   |  |   | - |  |
| Pert       | h Laboratory - N                       | NATA Site # 237  | 736                           |                            |                      |                               |  |   |                                 |                     |  |   |   |                                  |                         |   |  |   | - |  |
| Exte       | rnal Laboratory                        |  |                               |                            | · · · - ·-           |                               |  |   |                                 |                     |  |   |   |                                  |                         |   |  |   | - |  |
| No         | Sample ID                              | LAB ID   |                               |                            |                      |                               |  |   |                                 |                     |  |   |   |                                  |                         |   |  |   |   |  |
| 1          | TP13_0.1                               | Nov 17, 2018   |                               | Soil                       | S18-No24227          | Х                             |  |   |                                 |                     |  | Х   | Х   |                                  | Х                       |   | Х  |   |   |  |
| 2          | TP13_0.4                               | Nov 17, 2018   |                               | Soil                       | S18-No24228          | Х                             |  |   |                                 |                     |  |   |   |                                  |                         |   |  |   | _ |  |
| 3          | TP14_0.1                               | S18-No24229  | х                             |                            |                      |                               |  |   |                                 |                     |  |   |   |                                  |                         | -   |  |   |   |  |
| 4          | 4 TP14_0.7 Nov 17, 2018 Soil S18-No242 |  |                               |                            |                      |                               |  |   |                                 |                     |  |   |   |                                  | Х                       |   |  | х   | 4 |  |
| 5          | TP15_0.1                               | Nov 17, 2018   |                               | Soil                       | S18-No24231          |                               |  |   |                                 |                     |  |   |   |                                  | Х                       |   | X  |   | 4 |  |
| 6          | TP15_0.6                               | Nov 17, 2018   |                               | Soil                       | S18-No24232          |                               |  |   |                                 |                     |  | Х   |   |                                  | Х                       |   |  | Х   | 4 |  |
| 7          | TP16_0.1                               | Nov 17, 2018   |                               | Soil                       | S18-No24233          |                               |  |   |                                 |                     |  |   |   |                                  | Х                       |   | Х  |   | - |  |
| 8          | TP16_0.8                               | S18-No24234  |                               |                            |                      |                               |  |   |                                 |                     |  | Х   |   |                                  | Х                       | -   |  |   |   |  |
| 9          | TP17_0.1                               | S18-No24235  | Х                             |                            |                      |                               |  |   |                                 |                     |  |   |   |                                  |                         |   |  |   |   |  |

|               | 🔅 eur   | ofins  | mgt                            |                       | ABN– 50 005<br>e.mail : Enviro<br>web : www.eu | 085 521<br>Sales@<br>rofins.co | eurofin:<br>om.au          | s.com                           | Melbourne<br>2-5 Kingston Town Close<br>Oakleigh VIC 3166<br>Phone : +61 3 8564 5000<br>NATA # 1261<br>Site # 1254 & 14271 |                                  |                         |                          | e<br>10           | <b>Syd</b><br>Unit<br>16 I<br>Lan<br>Pho<br>NA | Iney<br>t F3, Bu<br>Mars Ro<br>le Cove<br>one : +6<br>TA # 12 | iilding F<br>bad<br>West N<br>1 2 990<br>61 Site | ISW 200<br>0 8400<br># 18217 | 66<br>7                 | Brisbane<br>1/21 Smallwood Place<br>Murarrie QLD 4172<br>Phone : +61 7 3902 460<br>NATA # 1261 Site # 207 | Perth           2/91 Leach Highway           Kewdale WA 6105           00         Phone : +61 8 9251 9600           794         NATA # 1261           Site # 23736 |
|---------------|---|--|--------------------------------|-----------------------|--|--------------------------------|----------------------------|---------------------------------|--|----------------------------------|-------------------------|--------------------------|-------------------|--|---|--|------------------------------|-------------------------|---|--|
| Co            | ompany Name:<br>ddress:   | Cardno (NSV<br>Level 9, 203<br>St Leonards<br>NSW 2065 | N/ACT) Pty Lt<br>Pacific Highw | d<br>ay               |  |                                | Or<br>Re<br>Ph<br>Fa       | der N<br>port a<br>none:<br>ix: | o.:<br>#:  | 6:<br>0:<br>0:                   | 28416<br>29496<br>2 949 | 6<br>67700<br>9 390      | 2                 |  |   |  |                              | R<br>D<br>P<br>C        | eceived:<br>ue:<br>riority:<br>ontact Name:   | Nov 19, 2018 2:52 PM<br>Nov 26, 2018<br>5 Day<br>Ben Withnall  |
| Pr<br>Pr      | oject Name:<br>oject ID:  | KYEEMAGH<br>80818157                                   | INFANTS SC                     | CHOOL                 |  |                                |                            |                                 |  |                                  |                         |                          |                   |  |   |  | Euro                         | ofins                   | mgt Analytical Se   | ervices Manager : Nibha Vaidya   |
| Sample Detail |   |  |                                |                       |  |                                | Asbestos Absence /Presence | HOLD                            | HOLD   | Acid Sulfate Soils Field pH Test | BTEX                    | Eurofins   mgt Suite B15 | Volatile Organics | TRH (after Silica Gel cleanup)                 | Moisture Set  | Total Recoverable Hydrocarbons                   | Eurofins   mgt Suite B7      | Eurofins   mgt Suite B8 |   |  |
| Mel           | bourne Laborato   | ory - NATA Site  | # 1254 & 142                   | ?71                   |  |                                |                            | Х                               |  |                                  |                         | х                        | Х                 | Х  | Х   | Х  | Х                            | Х                       |   |  |
| Syd           | ney Laboratory  | - NATA Site # 1  | 8217                           |                       |  | Х                              | Х                          |                                 |  |                                  | х                       |                          |                   |  |   | х  | Х                            | Х                       |   |  |
| Bris          | bane Laborator  | y - NATA Site #  | 20794                          |                       |  |                                |                            |                                 | Х  | Х                                |                         |                          |                   |  |   |  |                              |                         |   |  |
| Per           | th Laboratory - N   | NATA Site # 237  | 36                             |                       | 1  |                                |                            |                                 |  |                                  |                         |                          |                   |  |   |  |                              |                         |   |  |
| 10            | TP17_0.5  | Nov 17, 2018   |                                | Soil                  | S18-No24236                                    |                                |                            |                                 |  |                                  |                         |                          |                   |  | Х   |  |                              | Х                       |   |  |
| 11            | TP18_0.1  | Nov 17, 2018   |                                | Soil                  | S18-No24237                                    | X                              |                            |                                 |  |                                  |                         | Х                        |                   |  | Х   |  | Х                            |                         |   |  |
| 12            | TP18_0.4  | Nov 17, 2018   |                                | Soil                  | S18-No24238                                    | - V                            |                            |                                 |  |                                  |                         | ~                        |                   |  | X   |  |                              | Х                       |   |  |
| 13            | 1P20_0.1  | Nov 17, 2018   |                                | Sol                   | S18-No24239                                    | X                              |                            |                                 |  |                                  |                         | X                        |                   |  | X   |  | X                            |                         |   |  |
| 14            | QA300   | Nov 17, 2018   |                                | 50II<br>Duildin 7     | 518-No24240                                    |                                |                            |                                 |  | <u> </u>                         |                         |                          | <u> </u>          |  | X   |  | X                            |                         |   |  |
| 15            | ASB2  | INOV 17, 2018  |                                | Building<br>Materials | 518-N024241                                    |                                | X                          |                                 |  |                                  |                         |                          |                   |  |   |  |                              |                         |   |  |
| 16            | KYE_TB  | Nov 17, 2018   |                                | Soil                  | S18-No24242                                    |                                |                            |                                 |  |                                  | X                       |                          |                   |  |   |  |                              |                         |   |  |
| 17            | KYE_TS  | Nov 17, 2018   |                                | Soil                  | S18-No24243                                    |                                |                            |                                 |  |                                  | X                       |                          |                   |  |   |  |                              |                         |   |  |
| 18            | 18         BH02_0.5         Nov 17, 2018         Soil         S18-No2424           10         DU0_4.0         Num 47, 2018         Du1         Du0 40 |  |                                |                       |  |                                |                            |                                 |  |                                  |                         |                          |                   |  | Х   |  | Х                            |                         |   |  |
| 19            | BH2_1.0   | S18-No24246  |                                |                       |  |                                |                            |                                 |  |                                  |                         | Х                        |                   |  | Х   |  |                              |                         |   |  |
| 20            | BH03_0.5  | Nov 17, 2018   | S18-No24247                    | Х                     |  |                                |                            |                                 |  |                                  |                         |                          | Х                 |  | Х   |  |                              |                         |   |  |

|  | 🔅 eur   | ofins  | mgt                               |      | ABN– 50 005<br>e.mail : Enviro<br>web : www.eur | 085 521<br>Sales@<br>rofins.co | eurofins<br>m.au            | s.com                          | N<br>2<br>O<br>P<br>N<br>S | <b>lelbourn</b><br>-5 Kings<br>Dakleigh<br>hone : +<br>IATA # 1<br>ite # 12 | e<br>ston Tov<br>VIC 31<br>⊦61 3 85<br>1261<br>54 & 14 | vn Clos<br>66<br>564 500<br>271 | e<br>0            | <b>Syd</b><br>Unit<br>16 I<br>Lan<br>Pho<br>NA <sup>-</sup> | Iney<br>t F3, Bu<br>Mars Ro<br>e Cove<br>one : +6<br>FA # 12 | ilding F<br>bad<br>West N<br>1 2 990<br>61 Site | ISW 20<br>0 8400<br># 1821 | 66<br>7                 | Brisbane<br>1/21 Smallwood Place<br>Murarrie QLD 4172<br>Phone : +61 7 3902 46<br>NATA # 1261 Site # 20 | Perth<br>2/91 Leach Highw<br>Kewdale WA 610<br>00 Phone : +61 8 92:<br>794 NATA # 1261<br>Site # 23736 | vay<br>5<br>51 9600 |
|--|---|--|-----------------------------------|------|---|--------------------------------|-----------------------------|--------------------------------|----------------------------|---|--|---------------------------------|-------------------|---|--|---|----------------------------|-------------------------|---|--|---------------------|
| Co<br>Ao<br>Pr   | ompany Name:<br>Idress:<br>oject Name:  | Cardno (NSW<br>Level 9, 203 F<br>St Leonards<br>NSW 2065<br>KYEEMAGH | //ACT) Pty Ltd<br>Pacific Highway | /    |   |                                | Or<br>Re<br>Ph<br>Fa        | der N<br>port #<br>ione:<br>x: | o.:<br>#:                  | 6:<br>0:<br>0:  | 28416<br>29496<br>2 949                                | 6<br>67700<br>9 390             | 2                 |   |  |   |                            | R<br>D<br>P<br>C        | eceived:<br>Due:<br>Iriority:<br>Contact Name:  | Nov 19, 2018 2:52 F<br>Nov 26, 2018<br>5 Day<br>Ben Withnall   | M                   |
| Pr   | oject ID:   | 80818157   |                                   |      |   |                                |                             |                                |                            |   |  |                                 |                   |   |  |   | Eure                       | ofins                   | mgt Analytical S  | ervices Manager : Nik  | oha Vaidya          |
| Sample Detail  |   |  |                                   |      |   |                                | Asbestos Absence / Presence | HOLD                           | HOLD                       | Acid Sulfate Soils Field pH Test  | BTEX   | Eurofins   mgt Suite B15        | Volatile Organics | TRH (after Silica Gel cleanup)                              | Moisture Set   | Total Recoverable Hydrocarbons                  | Eurofins   mgt Suite B7    | Eurofins   mgt Suite B8 |   |  |                     |
| Mell   | oourne Laborato   | ory - NATA Site #  | # <b>1254 &amp; 1427</b> 1        | 1    |   |                                |                             | Х                              |                            |   |  | х                               | х                 | Х   | Х  | Х   | х                          | Х                       |   |  |                     |
| Syd  | ney Laboratory ·  | - NATA Site # 18   | 3217                              |      |   | х                              | Х                           |                                |                            |   | х  |                                 |                   |   |  | х   | х                          | х                       |   |  |                     |
| Bris   | bane Laboratory   | / - NATA Site # 2  | 20794                             |      |   |                                |                             |                                | Х                          | Х   |  |                                 |                   |   |  |   |                            |                         |   |  |                     |
| Pert   | h Laboratory - N  | IATA Site # 2373   | 36                                |      |   |                                |                             |                                |                            |   |  |                                 |                   |   |  |   |                            |                         |   |  |                     |
| 21   | BH02_2.0-2.45   | Nov 17, 2018   | S                                 | Soil | S18-No24248                                     |                                |                             | <u> </u>                       |                            | X   |  |                                 |                   |   |  |   |                            |                         |   |  |                     |
| 22   | BH02_4.0-4.45   | Nov 17, 2018   | S                                 | Soil | S18-No24249                                     |                                |                             |                                |                            | X   |  |                                 |                   |   |  |   |                            |                         |   |  |                     |
| 23   | BH02_5.5-5.95   | Nov 17, 2018   | S                                 | Soil | S18-No24250                                     |                                |                             |                                |                            | X   |  |                                 |                   |   |  |   |                            |                         |   |  |                     |
| 24   | BH02_7.0-7.45   | Nov 17, 2018   | S                                 | Soil | S18-No24251                                     |                                |                             |                                |                            | X   |  |                                 |                   |   |  |   |                            |                         |   |  |                     |
| 25   | BH02_8.5-8.95   | Nov 17, 2018   | S                                 | ioil | S18-No24252                                     |                                |                             |                                |                            | X   |  |                                 |                   |   |  |   |                            |                         |   |  |                     |
| 26   | BH02_10.0-<br>10.45   | Nov 17, 2018   | S                                 | 5011 | S18-N024253                                     |                                |                             |                                |                            | X   |  |                                 |                   |   |  |   |                            |                         |   |  |                     |
| 27         BH02_11.5-<br>11.95         Nov 17, 2018         Soil         S18-No24254 |   |  |                                   |      |   |                                |                             |                                |                            | x   |  |                                 |                   |   |  |   |                            |                         |   |  |                     |
| 28   | 28         BH02_13.0-<br>13.45         Nov 17, 2018         Soil         S18-No2425 |  |                                   |      |   |                                |                             |                                |                            | x   |  |                                 |                   |   |  |   |                            |                         |   |  |                     |
| 29   | BH02_14.5-<br>14.95   | S18-No24256  |                                   |      |   |                                | x                           |                                |                            |   |  |                                 |                   |   |  |   |                            |                         |   |  |                     |

|   | Mgt ABN-50<br>e.mail: Ei<br>web : www   |  |                                |           |             |   |                      | s.com                            | Melbourne<br>2-5 Kingston Town Close<br>Oakleigh VIC 3166<br>Phone : +61 3 8564 5000<br>NATA # 1261<br>Site # 1254 & 14271 |                                  |                         |                          | <b>Syd</b><br>Unit<br>16 M<br>Lan<br>Pho<br>NAT | Iney<br>t F3, Bu<br>Mars Ro<br>e Cove<br>one : +6<br>FA # 12 | uilding F<br>bad<br>West N<br>1 2 990<br>61 Site | SW 20<br>0 8400<br># 1821      | 66<br>7                 | Brisbane<br>1/21 Smallwood Place<br>Murarrie QLD 4172<br>Phone : +61 7 3902 46(<br>NATA # 1261 Site # 20) | 00<br>794                                      | <b>Perth</b><br>2/91 Leach Highway<br>Kewdale WA 6105<br>Phone : +61 8 9251 9600<br>NATA # 1261<br>Site # 23736 |  |  |
|---|---|--|--------------------------------|-----------|-------------|---|----------------------|----------------------------------|--|----------------------------------|-------------------------|--------------------------|---|--|--|--------------------------------|-------------------------|---|--|---|--|--|
| Co<br>Ad  | ompany Name:<br>Idress:                 | Cardno (NS)<br>Level 9, 203<br>St Leonards<br>NSW 2065 | W/ACT) Pty Lt<br>Pacific Highw | id<br>/ay |             |   | Or<br>Re<br>Ph<br>Fa | der N<br>eport i<br>ione:<br>ix: | o.:<br>#:  | 6:<br>0:<br>0:                   | 28416<br>29496<br>2 949 | 6<br>67700<br>9 390      | 2   |  |  |                                |                         | R<br>D<br>P<br>C  | eceived:<br>Jue:<br>Iriority:<br>Contact Name: | Nov 1<br>Nov 2<br>5 Day<br>Ben V  | 9, 2018 2:52 PM<br>:6, 2018<br>,<br>Vithnall |  |
| Pro<br>Pro  | oject Name:<br>oject ID:                | KYEEMAGH<br>80818157                                   | I INFANTS SC                   | CHOOL     |             |   |                      |                                  |  |                                  |                         |                          |   |  |  |                                | Euro                    | ofins   | mgt Analytical Se                              | ervices   | Manager : Nibha Vaidya                       |  |
| Sample Detail   |   |  |                                |           |             |   |                      | HOLD                             | HOLD   | Acid Sulfate Soils Field pH Test | BTEX                    | Eurofins   mgt Suite B15 | Volatile Organics                               | TRH (after Silica Gel cleanup)                               | Moisture Set                                     | Total Recoverable Hydrocarbons | Eurofins   mgt Suite B7 | Eurofins   mgt Suite B8   |  |   |  |  |
| Melk  | ourne Laborato                          | ory - NATA Site  | # 1254 & 142                   | 271       |             |   |                      | Х                                |  |                                  |                         | Х                        | Х   | Х  | Х  | Х                              | Х                       | Х   |  |   |  |  |
| Sydi  | ney Laboratory                          | - NATA Site # 1  | 8217                           |           |             | Х | Х                    |                                  |  |                                  | Х                       |                          |   |  |  | X                              | Х                       | Х   |  |   |  |  |
| Bris  | bane Laboratory                         | y - NATA Site #  | 20794                          |           |             |   |                      |                                  | Х  | X                                |                         |                          |   |  |  |                                |                         |   |  |   |  |  |
| 30  | h Laboratory - N<br>BH02_16.0-<br>16.45 | Nov 17, 2018   | 736                            | Soil      | S18-No24257 |   |                      |                                  |  | x                                |                         |                          |   |  |  |                                |                         |   |  |   |  |  |
| 31  | BH02_17.5-<br>17.95                     | Nov 17, 2018   |                                | Soil      | S18-No24258 |   |                      |                                  |  | x                                |                         |                          |   |  |  |                                |                         |   |  |   |  |  |
| 32  | BH03_1.0-1.1                            | Nov 17, 2018   |                                | Soil      | S18-No24259 |   |                      |                                  |  | х                                |                         |                          |   |  |  |                                |                         |   |  |   |  |  |
| 33  | BH03_2.5-2.95                           | Nov 17, 2018   |                                | Soil      | S18-No24260 |   |                      |                                  |  | х                                |                         |                          |   |  |  |                                |                         |   |  |   |  |  |
| 34         BH03_4.0-4.45         Nov 17, 2018         Soil         S18-No2420   |   |  |                                |           |             |   |                      |                                  |  | Х                                |                         |                          |   |  |  |                                |                         |   |  |   |  |  |
| 35         BH03_5.5-5.95         Nov 17, 2018         Soil         S18-No2426           55         50 |   |  |                                |           |             |   |                      |                                  |  | Х                                |                         |                          |   |  |  |                                |                         |   |  |   |  |  |
| 36  | BH03_7.0-7.45                           | Nov 17, 2018   |                                | Soil      | S18-No24263 |   | <u> </u>             |                                  |  | X                                |                         |                          |   |  |  |                                |                         |   |  |   |  |  |
| 37  | BH03_8.5-8.95                           | Nov 17, 2018   |                                | Soil      | S18-No24264 |   |                      |                                  |  | X                                |                         |                          |   |  |  |                                |                         |   |  |   |  |  |
| 38         BH03_10.0-<br>10.45         Nov 17, 2018         Soil         S18-No24265           20         BH03_14.5         Nov 17, 2018         Soil         S18-No24265   |   |  |                                |           |             |   |                      |                                  |  | x                                |                         |                          |   |  |  |                                |                         |   |  |   |  |  |
| 39  | BH03_11.5-                              | Nov 17, 2018   |                                | Soil      | S18-No24266 |   |                      |                                  |  | Х                                |                         |                          |   |  |  |                                |                         |   |  |   |  |  |

|   | 🔅 eur   | ofins  | mgt  |                   | ABN– 50 005<br>e.mail : Enviro<br>web : www.eu | I– 50 005 085 521<br>ail : EnviroSales@eurofins.com<br>∋: www.eurofins.com.au |                            |                                  | M<br>20<br>P<br>N<br>S | Melbourne<br>2-5 Kingston Town Close<br>Oakleigh VIC 3166<br>Phone : +61 3 8564 5000<br>NATA # 1261<br>Site # 1254 & 14271 |                         |                          |                   | <b>Sydney</b><br>Unit F3, Building F<br>16 Mars Road<br>Lane Cove West NSW 2066<br>Phone : +61 2 9900 8400<br>NATA # 1261 Site # 18217 |              |                                |                         | 66<br>7                 | Brisbane<br>1/21 Smallwood Place<br>Murarrie QLD 4172<br>Phone : +61 7 3902 46<br>NATA # 1261 Site # 20 | Perth           2/91 Lead           Kewdale           00         Phone : +           794         NATA #           Site # 23 | sh Highway<br>WA 6105<br>61 8 9251 9600<br>261<br>736 |
|---|---|--|--|-------------------|--|---|----------------------------|----------------------------------|------------------------|--|-------------------------|--------------------------|-------------------|--|--------------|--------------------------------|-------------------------|-------------------------|---|---|---|
| Co<br>Ad<br>Pro   | ompany Name:<br>Idress:<br>oject Name:<br>oject ID: | Cardno (NSV<br>Level 9, 203<br>St Leonards<br>NSW 2065<br>KYEEMAGH<br>80818157 | W/ACT) Pty Lt<br>Pacific Highw<br>I INFANTS SC | d<br>/ay<br>CHOOL |  |   | Or<br>Re<br>Ph<br>Fa       | rder N<br>eport a<br>none:<br>x: | o.:<br>#:              | 6:<br>0:<br>0:   | 28416<br>29496<br>2 949 | 5<br>57700<br>9 390      | 2                 |  |              |                                | Fur                     | F<br>C<br>O             | Received:<br>Due:<br>Priority:<br>Contact Name:   | Nov 19, 2018<br>Nov 26, 2018<br>5 Day<br>Ben Withnall   | 2:52 PM   |
|   | Sample Detail                                       |  |  |                   |  |   | Asbestos Absence /Presence | HOLD                             | НОГД                   | Acid Sulfate Soils Field pH Test   | BTEX                    | Eurofins   mgt Suite B15 | Volatile Organics | TRH (after Silica Gel cleanup)   | Moisture Set | Total Recoverable Hydrocarbons | Eurofins   mgt Suite B7 | Eurofins   mgt Suite B8 |   | g.  |   |
| Melk  | ourne Laborato                                      | ory - NATA Site  | # 1254 & 142                                   | .71               |  |   |                            | х                                |                        |  |                         | Х                        | Х                 | Х  | Х            | Х                              | Х                       | Х                       |   |   |   |
| Syd   | ney Laboratory                                      | - NATA Site # 1  | 8217   |                   |  | х   | x                          |                                  |                        |  | Х                       |                          |                   |  |              | х                              | Х                       | х                       |   |   |   |
| Bris  | Brisbane Laboratory - NATA Site # 20794             |  |  |                   |  |   | <u> </u>                   |                                  | Х                      | X  |                         |                          |                   |  |              |                                |                         |                         | 4   |   |   |
| Pert  | Perth Laboratory - NATA Site # 23736                |  |  |                   |  |   |                            |                                  |                        |  |                         |                          |                   |  |              |                                |                         |                         | -   |   |   |
| 40  | 11.95<br>PH02 12 0                                  | Nov 17, 2019   |  | Soil              | S18 No24267                                    |   |                            |                                  |                        |  |                         |                          |                   |  |              |                                |                         |                         | -   |   |   |
| 40  | 13.45   | 1100 17, 2018  |  | 501               | 518-1024267                                    |   |                            |                                  |                        | Х  |                         |                          |                   |  |              |                                |                         |                         |   |   |   |
| 41  | TP20_0.4  | Nov 17, 2018   |  | Soil              | S18-No24268                                    |   |                            | х                                |                        |  |                         |                          |                   |  |              |                                |                         |                         |   |   |   |
| 42  | 42 KYE_GUM Nov 17, 2018 Water S18-No24269           |  |  |                   |  |   |                            |                                  |                        |  |                         |                          | Х                 |  | х            |                                |                         | 1                       |   |   |   |
| 43         BH02_2.0         Nov 17, 2018         Soil         S18-No24270 |   |  |  | <b> </b>          |  |   | х                          |                                  |                        |  |                         |                          |                   |  |              |                                | 1                       |                         |   |   |   |
| 44  | 44 KYE_RIN Nov 17, 2018 Water S18-No24271           |  |  |                   |  |   |                            |                                  |                        |  |                         |                          |                   |  |              |                                |                         | Х                       |   |   |   |
| Test  | est Counts  |  |  |                   |  |   | 1                          | 2                                | 2                      | 20   | 2                       | 4                        | 1                 | 1  | 14           | 1                              | 8                       | 7                       |   |   |   |



#### Internal Quality Control Review and Glossary

#### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.

- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- 4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- 6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- 7. Samples were analysed on an 'as received' basis.
- 8. This report replaces any interim results previously issued.

#### **Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days. \*\*NOTE: pH duplicates are reported as a range NOT as RPD

#### Units

| mg/kg: milligrams per kilogram           | mg/L: milligrams per litre         | ug/L: micrograms per litre                                       |
|--|------------------------------------|--|
| ppm: Parts per million                   | ppb: Parts per billion             | %: Percentage  |
| org/100mL: Organisms per 100 millilitres | NTU: Nephelometric Turbidity Units | MPN/100mL: Most Probable Number of organisms per 100 millilitres |

#### Terms

| Dry              | Where a moisture has been determined on a solid sample the result is expressed on a dry basis.   |
|------------------|--|
| LOR              | Limit of Reporting.  |
| SPIKE            | Addition of the analyte to the sample and reported as percentage recovery.   |
| RPD              | Relative Percent Difference between two Duplicate pieces of analysis.  |
| LCS              | Laboratory Control Sample - reported as percent recovery.  |
| CRM              | Certified Reference Material - reported as percent recovery.   |
| Method Blank     | In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.     |
| Surr - Surrogate | The addition of a like compound to the analyte target and reported as percentage recovery.   |
| Duplicate        | A second piece of analysis from the same sample and reported in the same units as the result to show comparison.   |
| USEPA            | United States Environmental Protection Agency  |
| APHA             | American Public Health Association   |
| TCLP             | Toxicity Characteristic Leaching Procedure   |
| сос              | Chain of Custody   |
| SRA              | Sample Receipt Advice  |
| QSM              | Quality Systems Manual ver 5.1 US Department of Defense  |
| СР               | Client Parent - QC was performed on samples pertaining to this report  |
| NCP              | Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within. |
| TEQ              | Toxic Equivalency Quotient   |

#### **QC** - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

#### **QC Data General Comments**

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike.
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



#### **Quality Control Results**

| Test   | Units | Result 1 |   | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|--|-------|----------|---|----------------------|----------------|--------------------|
| Method Blank   |       | 1        | 1 | -                    | -              |                    |
| Total Recoverable Hydrocarbons - 1999 NEPM Fractions |       |          |   |                      |                |                    |
| TRH C6-C9  | mg/L  | < 0.02   |   | 0.02                 | Pass           |                    |
| TRH C10-C14  | mg/L  | < 0.05   |   | 0.05                 | Pass           |                    |
| TRH C15-C28  | mg/L  | < 0.1    |   | 0.1                  | Pass           |                    |
| TRH C29-C36  | mg/L  | < 0.1    |   | 0.1                  | Pass           |                    |
| Method Blank   |       | 1        | 1 | 1                    | r              |                    |
| Volatile Organics                                    |       |          |   |                      |                |                    |
| 1.1-Dichloroethane                                   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.1-Dichloroethene                                   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.1.1-Trichloroethane                                | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.1.1.2-Tetrachloroethane                            | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.1.2-Trichloroethane                                | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.1.2.2-Tetrachloroethane                            | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.2-Dibromoethane                                    | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.2-Dichlorobenzene                                  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.2-Dichloroethane                                   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.2-Dichloropropane                                  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.2.3-Trichloropropane                               | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.2.4-Trimethylbenzene                               | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.3-Dichlorobenzene                                  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.3-Dichloropropane                                  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.3.5-Trimethylbenzene                               | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.4-Dichlorobenzene                                  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 2-Butanone (MEK)                                     | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 2-Propanone (Acetone)                                | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 4-Chlorotoluene                                      | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 4-Methyl-2-pentanone (MIBK)                          | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Allyl chloride                                       | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Benzene  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Bromobenzene   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Bromochloromethane                                   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Bromodichloromethane                                 | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Bromoform  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Bromomethane   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Carbon disulfide                                     | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Carbon Tetrachloride                                 | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Chlorobenzene  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Chloroethane   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Chloroform   | mg/L  | < 0.005  |   | 0.005                | Pass           |                    |
| Chloromethane  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| cis-1.2-Dichloroethene                               | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| cis-1.3-Dichloropropene                              | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Dibromochloromethane                                 | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Dibromomethane                                       | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Dichlorodifluoromethane                              | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Ethylbenzene   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| lodomethane  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Isopropyl benzene (Cumene)                           | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| m&p-Xylenes  | mg/L  | < 0.002  |   | 0.002                | Pass           |                    |
| Methylene Chloride                                   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| o-Xylene   | mg/L  | < 0.001  |   | <br>0.001            | Pass           |                    |



| Syram         mgL         c.0.001         0.001         Pass           Totanchorohome         mgL         c.0.001         0.001         Pass           Totanchorohome         mgL         c.0.001         0.001         Pass           trans-12-Dichlorophone         mgL         c.0.001         0.001         Pass           Trichtorophone         mgL         c.0.001         0.001         Pass           Trichtorophone         mgL         c.0.001         0.001         Pass           Viry chloride         mgL         c.0.001         0.001         Pass           Viry chloride         mgL         c.0.01         0.001         Pass           Trichtorophorenethne         mgL         c.0.01         0.001         Pass           Trichtorophorenethne         mgL         c.0.01         0.001         Pass           Trichtorophorenethne         mgL         c.0.01         0.01         Pass           TRI CS-C10         mgL         c.0.01         0.01         Pass           TRN CS-C10         mgL         c.0.01         0.01         Pass           TRN CS-C10         mgL         c.0.01         0.01         Pass           TRN CS-C10         mgL  | Test   | Units | Result 1 |   | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|---|--|-------|----------|---|----------------------|----------------|--------------------|
| Tetrachroentene         mgt.         < 0.001  | Styrene  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Toluenc         mgL         < 0.001         0.001         Pass           trans-1.3-Dichloropropene         mgL         < 0.001  | Tetrachloroethene                                    | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| trans-12-Dichlorophene         mg/L         c.0.001         0.001         Pass           Trichlorophene         mg/L         c.0.01         0.001         Pass           Trichlorophene         mg/L         c.0.01         0.001         Pass           Trichlorophene         mg/L         c.0.01         0.001         Pass           Mithod Blank         mg/L         c.0.01         0.001         Pass           TRI Accoverable Mydrocarbons - 2013 NEPM Fractions         mg/L         c.0.02         0.02         Pass           TRI Accoverable Mydrocarbons - 2013 NEPM Fractions         mg/L         c.0.01         0.01         Pass           TRN Accolo 1         mg/L         c.0.02         0.02         Pass           TRN Accolo 1         mg/L         c.0.01         Pass         TRN Accolo 1         Pass           TRN Accolo 1         mg/L         c.0.01         0.01         Pass         TRN Accolo 1         Pass           TRN Accolo 1         mg/L         c.0.01         0.01         Pass         TRN Accolo 1         Pass           TRN Accolo 2         mg/L         c.0.01         0.001         Pass         TRN Accolo 1         Pass         TRN Accolo 1         Pass         TRN Accolo 1         Pass <td>Toluene</td> <td>mg/L</td> <td>&lt; 0.001</td> <td></td> <td>0.001</td> <td>Pass</td> <td></td> | Toluene  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| trans-1-3-bichicrogropene         mg/L         < 0.001         ●.001         Pass           Trichicorofusoromethane         mg/L         < 0.001  | trans-1.2-Dichloroethene                             | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Trichloroducorethane         mg/L         < 0.001         0.001         Pass           Vinytchloride         mg/L         < 0.001   | trans-1.3-Dichloropropene                            | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Trichlorohuoromethane         mgl,         < 0.001         0.001         Pass           Viny chloride         mgl,         < 0.003  | Trichloroethene                                      | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Vnychonick         mg/L         < 0.001         Pass           Mathod Blank         mg/L         < 0.003  | Trichlorofluoromethane                               | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Xylenes - Total         mg/L         < 0.003         Pass           Method Blank               Total Recoverable Hydrocarbons - 2013 NEPM Fractions               Naphthalania         mg/L         < 0.01  | Vinyl chloride                                       | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Method Blank         Total Recoverable Hydrocarbons - 2013 NEPM Fractions         mgL         < 0.01         0.01         Pass           TRH 0.06-010         mg/L         < 0.02   | Xylenes - Total                                      | mg/L  | < 0.003  |   | 0.003                | Pass           |                    |
| Total Recoverable Hydrocarbons - 2013 NEPM Fractions         mg/L         < <td>Method Blank</td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td>  | Method Blank   |       |          |   | -                    |                |                    |
| Naphthalene         mgL         < 0.01         Pass           TRH 0-5C10         mgL         < 0.02   | Total Recoverable Hydrocarbons - 2013 NEPM Fractions |       |          |   |                      |                |                    |
| TRH 5C10-C16         mgL         < 0.02         Pass           TRH >C10-C16         mgL         < 0.1   | Naphthalene  | mg/L  | < 0.01   |   | 0.01                 | Pass           |                    |
| TRH > 5C10-C16         mgL         < 0.05         Pass           TRH > 5C10-C16         0.1         0.1         Pass           TRH > 5C34-C40         mgL         < 0.1   | TRH C6-C10   | mg/L  | < 0.02   |   | 0.02                 | Pass           |                    |
| TRH > C34 C40         mg/L         < 0.1         Pass           Method Blank         0.1         Pass           Polycyclic Aromatic Hydrocarbons         0.1         Pass           Acenaphthone         mg/L         < 0.001   | TRH >C10-C16   | mg/L  | < 0.05   |   | 0.05                 | Pass           |                    |
| TRH sc34-C40         mg/L         < 0.1         Pass           Method Blank               Polycyclic Aromatic Hydrocarbons         mg/L         < 0.001         Pass            Acenaphthylene         mg/L         < 0.001         Pass            Acenaphthylene         mg/L         < 0.001         Pass            Anthracene         mg/L         < 0.001         Pass            Benzolajanthracene         mg/L         < 0.001         Pass            Dibenz(a)hanthracene         mg/L         < 0.001         Pass            Dibenz(a)hanthracene         mg/L         < 0.001         Pass            Houranthere         mg/L         < 0.001         Pass            Fluoranthere         mg/L         < 0.001         0.001  | TRH >C16-C34   | mg/L  | < 0.1    |   | 0.1                  | Pass           |                    |
| Method Blank         Unit Polycyclic Aromatic Hydrocarbons         mgL         < 0.001         Pass           Polycyclic Aromatic Hydrocarbons         mgL         < 0.001  | TRH >C34-C40   | mg/L  | < 0.1    |   | 0.1                  | Pass           |                    |
| Polycyclic Aromatic Hydrocarbons         mg/L         < 0.001         0.001         Pass           Acenaphthene         mg/L         < 0.001  | Method Blank   |       | 1        | Γ |                      |                |                    |
| Acenaphthene         mg/L         < 0.001         0.001         Pass           Acenaphthylene         mg/L         < 0.001  | Polycyclic Aromatic Hydrocarbons                     |       |          |   |                      |                |                    |
| Acenaphthylene         mg/L         < 0.001         ● Pass           Anthracene         mg/L         < 0.001  | Acenaphthene   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Anthracene         mg/L         < 0.001         Pass           Benz(a)anthracene         mg/L         < 0.001   | Acenaphthylene                                       | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Benz(a)anthracene         mg/L         < 0.001         Pass           Benzo(a)pyrene         mg/L         < 0.001   | Anthracene   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Benzo(s)pyrene         mg/L         < 0.001         Pass           Benzo(s)j/tuoranthene         mg/L         < 0.001   | Benz(a)anthracene                                    | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Benzo(pk)/fluoranthene         mg/L         < 0.001         Pass           Benzo(pk)/louranthene         mg/L         < 0.001   | Benzo(a)pyrene                                       | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Benzo(g,h.i)perylene         mg/L         < 0.001         Pass           Benzo(k)fluoranthene         mg/L         < 0.001  | Benzo(b&j)fluoranthene                               | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Benzo(k)fluoranthene         mg/L         < 0.001         Pass           Chrysene         mg/L         < 0.001  | Benzo(g.h.i)perylene                                 | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Chrysene         mg/L         < 0.001         Pass           Dibenz(a,h)anthracene         mg/L         < 0.001   | Benzo(k)fluoranthene                                 | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Dibenz(a,h)anthracene         mg/L         < 0.001         0.001         Pass           Fluoranthene         mg/L         < 0.001   | Chrysene   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Fluoranthene         mg/L         < 0.001         0.001         Pass           Fluorene         mg/L         < 0.001  | Dibenz(a.h)anthracene                                | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Fluorene         mg/L         < 0.001         0.001         Pass           Indeno(1.2.3-cd)pyrene         mg/L         < 0.001  | Fluoranthene   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Indeno(1.2.3-cd)pyrene         mg/L         < 0.001         Pass           Naphthalene         mg/L         < 0.001   |  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Naphthalene         mg/L         < 0.001         Pass           Phenanthrene         mg/L         < 0.001   | Indeno(1.2.3-cd)pyrene                               | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Phenanthrene         mg/L         < 0.001         Pass           Pyrene         mg/L         < 0.001  | Naphthalene  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Pyrene         mg/L         < 0.001         Pass           Method Blank   | Phenanthrene   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Method Blank           Heavy Metals         mg/L         < 0.001         Pass           Arsenic         mg/L         < 0.001  | Pyrene   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Heavy Metals         mg/L         < 0.001         Pass           Arsenic         mg/L         < 0.001   | Method Blank   |       | 1        |   |                      |                |                    |
| Arsenic       mg/L       < 0.001       Pass         Cadmium       mg/L       < 0.0002   |  |       | 0.004    |   | 0.004                | Deer           |                    |
| Cadmidin         Ing/L         < 0.0002         Pass           Chromium         mg/L         < 0.001  | Arsenic  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Chroninthin         IngrL         < 0.001         Pass           Copper         mg/L         < 0.001  | Chromium   | mg/L  | < 0.0002 |   | 0.0002               | Pass           |                    |
| Copper         IngL         < 0.001         Pass           Lead         mg/L         < 0.001  | Coppor   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Lead         Ing/L         < 0.001         Pass           Mercury         mg/L         < 0.0001   |  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Imple         S 0.0001         Prass           Nickel         mg/L         < 0.001  | Mercury  | mg/L  |          |   | 0.001                | Pass           |                    |
| Intervent       Intgr.L       < 0.001       I rass         Zinc       mg/L       < 0.005  | Nickel   | mg/L  | < 0.0001 |   | 0.0001               | Pass           |                    |
| LCS - % Recovery       Img/L       < 0.000  | Zinc   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Total Recoverable Hydrocarbons - 1999 NEPM Fractions         ////////////////////////////////////   | LCS - % Recovery                                     | mg/L  | < 0.000  |   | 0.000                | 1 435          |                    |
| TRH C6-C9       %       113       70-130       Pass         TRH C10-C14       %       90       70-130       Pass         LCS - % Recovery       Volatile Organics            1.1-Dichloroethene       %       85       70-130       Pass         1.1-Dichloroethene       %       85       70-130       Pass         1.2-Dichloroethane       %       93       70-130       Pass         1.2-Dichloroethane       %       98       70-130       Pass  | Total Recoverable Hydrocarbons - 1999 NEPM Fractions |       |          |   |                      |                |                    |
| TRH C10-C14       %       90       70-100       Pass         LCS - % Recovery       %       90       70-130       Pass         Volatile Organics              1.1-Dichloroethene       %       85       70-130       Pass          1.1-Dichloroethane       %       93       70-130       Pass          1.2-Dichloroethane       %       98       70-130       Pass   | TRH C6-C9  | %     | 113      |   | 70-130               | Pass           |                    |
| LCS - % Recovery       70 100       1 400         Volatile Organics       85       70-130       Pass         1.1-Dichloroethane       % 93       70-130       Pass         1.2-Dichloroethane       % 98       70-130       Pass  | TBH C10-C14  | %     | 90       |   | 70-130               | Pass           |                    |
| Volatile Organics         %         85         70-130         Pass           1.1-Dichloroethane         %         93         70-130         Pass           1.2-Dichloroethane         %         104         70-130         Pass           1.2-Dichloroethane         %         98         70-130         Pass   | LCS - % Recovery                                     |       |          |   |                      | . 400          |                    |
| 1.1-Dichloroethene         %         85         70-130         Pass           1.1.1-Trichloroethane         %         93         70-130         Pass           1.2-Dichlorobenzene         %         104         70-130         Pass           1.2-Dichloroethane         %         98         70-130         Pass  | Volatile Organics                                    |       |          |   |                      |                |                    |
| 1.1.1-Trichloroethane         %         93         70-130         Pass           1.2-Dichloroethane         %         98         70-130         Pass  | 1.1-Dichloroethene                                   | %     | 85       |   | 70-130               | Pass           |                    |
| 1.2-Dichlorobenzene         %         104         70-130         Pass           1.2-Dichloroethane         %         98         70-130         Pass   | 1.1.1-Trichloroethane                                | %     | 93       |   | 70-130               | Pass           |                    |
| 1.2-Dichloroethane % 98 70-130 Pass   | 1.2-Dichlorobenzene                                  | %     | 104      |   | 70-130               | Pass           |                    |
|   | 1.2-Dichloroethane                                   | %     | 98       |   | 70-130               | Pass           |                    |



| Test                             |                 |        | Units | Result 1 |      | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|----------------------------------|-----------------|--------|-------|----------|------|----------------------|----------------|--------------------|
| Benzene                          |                 |        | %     | 94       |      | 70-130               | Pass           |                    |
| Ethylbenzene                     |                 |        | %     | 102      |      | 70-130               | Pass           |                    |
| m&p-Xylenes                      |                 |        | %     | 101      |      | 70-130               | Pass           |                    |
| Toluene                          |                 |        | %     | 102      |      | 70-130               | Pass           |                    |
| Trichloroethene                  |                 |        | %     | 87       |      | 70-130               | Pass           |                    |
| Xylenes - Total                  |                 |        | %     | 100      |      | 70-130               | Pass           |                    |
| LCS - % Recovery                 |                 |        |       |          |      |                      |                |                    |
| Total Recoverable Hydrocarbons - | 2013 NEPM Fract | ions   |       |          |      |                      |                |                    |
| Naphthalene                      |                 |        | %     | 111      |      | 70-130               | Pass           |                    |
| TRH C6-C10                       |                 |        | %     | 118      |      | 70-130               | Pass           |                    |
| TRH >C10-C16                     |                 |        | %     | 93       |      | 70-130               | Pass           |                    |
| LCS - % Recovery                 |                 |        |       | I        | r    | 1                    |                |                    |
| Polycyclic Aromatic Hydrocarbons | i               |        |       |          |      |                      |                |                    |
| Acenaphthene                     |                 |        | %     | 90       |      | 70-130               | Pass           |                    |
| Acenaphthylene                   |                 |        | %     | 92       |      | 70-130               | Pass           |                    |
| Anthracene                       |                 |        | %     | 87       |      | 70-130               | Pass           |                    |
| Benz(a)anthracene                |                 |        | %     | 79       |      | 70-130               | Pass           |                    |
| Benzo(a)pyrene                   |                 |        | %     | 93       |      | 70-130               | Pass           |                    |
| Benzo(b&j)fluoranthene           |                 |        | %     | 91       |      | 70-130               | Pass           |                    |
| Benzo(g.h.i)perylene             |                 |        | %     | 101      |      | 70-130               | Pass           |                    |
| Benzo(k)fluoranthene             |                 |        | %     | 107      |      | 70-130               | Pass           |                    |
| Chrysene                         |                 |        | %     | 97       |      | 70-130               | Pass           |                    |
| Dibenz(a.h)anthracene            |                 |        | %     | 95       |      | 70-130               | Pass           |                    |
| Fluoranthene                     |                 |        | %     | 84       |      | 70-130               | Pass           |                    |
| Fluorene                         |                 |        | %     | 95       |      | 70-130               | Pass           |                    |
| Indeno(1.2.3-cd)pyrene           | %               | 85     |       | 70-130   | Pass |                      |                |                    |
| Naphthalene                      | %               | 91     |       | 70-130   | Pass |                      |                |                    |
| Phenanthrene                     |                 |        | %     | 87       |      | 70-130               | Pass           |                    |
| Pyrene                           |                 |        | %     | 87       |      | 70-130               | Pass           |                    |
| LCS - % Recovery                 |                 |        |       | 1        | I I  | 1                    |                |                    |
| Heavy Metals                     |                 |        |       |          |      |                      |                |                    |
| Arsenic                          |                 |        | %     | 100      |      | 80-120               | Pass           |                    |
| Cadmium                          |                 |        | %     | 96       |      | 80-120               | Pass           |                    |
| Chromium                         |                 |        | %     | 100      |      | 80-120               | Pass           |                    |
| Copper                           |                 |        | %     | 102      |      | 80-120               | Pass           |                    |
| Lead                             |                 |        | %     | 101      |      | 80-120               | Pass           |                    |
| Mercury                          |                 |        | %     | 91       |      | 75-125               | Pass           |                    |
|                                  |                 |        | %     | 98       |      | 80-120               | Pass           |                    |
|                                  |                 | 04     | %     | 100      |      | 80-120               | Pass           | Qualifying         |
| Test                             | Lab Sample ID   | Source | Units | Result 1 |      | Limits               | Limits         | Code               |
| Spike - % Recovery               |                 |        |       | 1        |      | 1                    |                |                    |
| Total Recoverable Hydrocarbons - | 1999 NEPM Fract | ions   |       | Result 1 |      |                      |                |                    |
| TRH C6-C9                        | M18-No23495     | NCP    | %     | 127      |      | 70-130               | Pass           |                    |
| TRH C10-C14                      | M18-No24798     | NCP    | %     | 114      |      | 70-130               | Pass           |                    |
| Spike - % Recovery               |                 |        |       | 1        |      |                      |                |                    |
| Total Recoverable Hydrocarbons - | 2013 NEPM Fract | ions   |       | Result 1 |      |                      |                |                    |
| Naphthalene                      | M18-No23495     | NCP    | %     | 113      |      | 70-130               | Pass           |                    |
| TRH C6-C10                       | M18-No23495     | NCP    | %     | 128      |      | 70-130               | Pass           |                    |
| TRH >C10-C16                     | M18-No24798     | NCP    | %     | 123      |      | 70-130               | Pass           |                    |
| Spike - % Recovery               |                 |        |       | 1        |      |                      |                |                    |
| Volatile Organics                |                 | ,      |       | Result 1 |      |                      |                |                    |
| 1.1-Dichloroethene               | M18-No23495     | NCP    | %     | 96       |      | 70-130               | Pass           |                    |
| 1.1.1-Trichloroethane            | M18-No23495     | NCP    | %     | 99       |      | 70-130               | Pass           |                    |
| 1.2-Dichlorobenzene              | M18-No23495     | NCP    | %     | 102      |      | 70-130               | Pass           |                    |



| Test                             | Lab Sample ID   | QA<br>Source | Units | Result 1 |          |     | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|----------------------------------|-----------------|--------------|-------|----------|----------|-----|----------------------|----------------|--------------------|
| 1.2-Dichloroethane               | M18-No23495     | NCP          | %     | 98       |          |     | 70-130               | Pass           |                    |
| Benzene                          | M18-No23495     | NCP          | %     | 100      |          |     | 70-130               | Pass           |                    |
| Ethylbenzene                     | M18-No23495     | NCP          | %     | 108      |          |     | 70-130               | Pass           |                    |
| m&p-Xylenes                      | M18-No23495     | NCP          | %     | 106      |          |     | 70-130               | Pass           |                    |
| o-Xylene                         | M18-No23495     | NCP          | %     | 103      |          |     | 70-130               | Pass           |                    |
| Toluene                          | M18-No23495     | NCP          | %     | 112      |          |     | 70-130               | Pass           |                    |
| Trichloroethene                  | M18-No23495     | NCP          | %     | 95       |          |     | 70-130               | Pass           |                    |
| Xylenes - Total                  | M18-No23495     | NCP          | %     | 105      |          |     | 70-130               | Pass           |                    |
| Spike - % Recovery               |                 |              |       |          |          |     |                      |                |                    |
| Polycyclic Aromatic Hydrocarbons | 3               |              |       | Result 1 |          |     |                      |                |                    |
| Acenaphthene                     | M18-No25533     | NCP          | %     | 91       |          |     | 70-130               | Pass           |                    |
| Acenaphthylene                   | M18-No25533     | NCP          | %     | 94       |          |     | 70-130               | Pass           |                    |
| Anthracene                       | M18-No25533     | NCP          | %     | 90       |          |     | 70-130               | Pass           |                    |
| Benz(a)anthracene                | M18-No25533     | NCP          | %     | 86       |          |     | 70-130               | Pass           |                    |
| Benzo(a)pyrene                   | M18-No25533     | NCP          | %     | 92       |          |     | 70-130               | Pass           |                    |
| Benzo(b&j)fluoranthene           | M18-No25533     | NCP          | %     | 83       |          |     | 70-130               | Pass           |                    |
| Benzo(g.h.i)perylene             | M18-No25533     | NCP          | %     | 99       |          |     | 70-130               | Pass           |                    |
| Benzo(k)fluoranthene             | M18-No25533     | NCP          | %     | 97       |          |     | 70-130               | Pass           |                    |
| Chrysene                         | M18-No25533     | NCP          | %     | 103      |          |     | 70-130               | Pass           |                    |
| Dibenz(a.h)anthracene            | M18-No25533     | NCP          | %     | 90       |          |     | 70-130               | Pass           |                    |
| Fluoranthene                     | M18-No25533     | NCP          | %     | 101      |          |     | 70-130               | Pass           |                    |
| Fluorene                         | M18-No25533     | NCP          | %     | 97       |          |     | 70-130               | Pass           |                    |
| Indeno(1.2.3-cd)pyrene           | M18-No25533     | NCP          | %     | 89       |          |     | 70-130               | Pass           |                    |
| Naphthalene                      | M18-No25533     | NCP          | %     | 87       |          |     | 70-130               | Pass           |                    |
| Phenanthrene                     | M18-No25533     | NCP          | %     | 97       |          |     | 70-130               | Pass           |                    |
| Pyrene                           | M18-No25533     | NCP          | %     | 103      |          |     | 70-130               | Pass           |                    |
| Spike - % Recovery               |                 |              |       | 1        |          |     |                      |                |                    |
| Heavy Metals                     | 1               |              |       | Result 1 |          |     |                      |                |                    |
| Arsenic                          | M18-No30209     | NCP          | %     | 101      |          |     | 75-125               | Pass           |                    |
| Cadmium                          | M18-No30209     | NCP          | %     | 98       |          |     | 75-125               | Pass           |                    |
| Chromium                         | M18-No30209     | NCP          | %     | 101      |          |     | 75-125               | Pass           |                    |
| Copper                           | M18-No30209     | NCP          | %     | 104      |          |     | 75-125               | Pass           |                    |
| Lead                             | M18-No30209     | NCP          | %     | 103      |          |     | 75-125               | Pass           |                    |
| Mercury                          | M18-No30209     | NCP          | %     | 89       |          |     | 70-130               | Pass           |                    |
| Nickel                           | M18-No30209     | NCP          | %     | 98       |          |     | 75-125               | Pass           |                    |
| Zinc                             | M18-No30209     | NCP          | %     | 99       |          |     | 75-125               | Pass           |                    |
| Test                             | Lab Sample ID   | QA<br>Source | Units | Result 1 |          |     | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
| Duplicate                        |                 |              |       |          |          |     | 1                    |                |                    |
| Total Recoverable Hydrocarbons - | 1999 NEPM Fract | ions         |       | Result 1 | Result 2 | RPD |                      |                |                    |
| TRH C6-C9                        | M18-No22029     | NCP          | mg/L  | < 0.02   | < 0.02   | <1  | 30%                  | Pass           |                    |
| TRH C10-C14                      | M18-No27374     | NCP          | mg/L  | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| TRH C15-C28                      | M18-No27374     | NCP          | mg/L  | < 0.1    | < 0.1    | <1  | 30%                  | Pass           |                    |
| TRH C29-C36                      | M18-No27374     | NCP          | mg/L  | < 0.1    | < 0.1    | <1  | 30%                  | Pass           |                    |
| Duplicate                        |                 |              |       |          |          |     | [                    |                |                    |
| Total Recoverable Hydrocarbons - | 2013 NEPM Fract | ions         |       | Result 1 | Result 2 | RPD |                      |                |                    |
| Naphthalene                      | M18-No22029     | NCP          | mg/L  | < 0.01   | < 0.01   | <1  | 30%                  | Pass           |                    |
| TRH C6-C10                       | M18-No22029     | NCP          | mg/L  | < 0.02   | < 0.02   | <1  | 30%                  | Pass           |                    |
| TRH >C10-C16                     | M18-No27374     | NCP          | mg/L  | < 0.05   | < 0.05   | <1  | 30%                  | Pass           |                    |
| TRH >C16-C34                     | M18-No27374     | NCP          | mg/L  | < 0.1    | < 0.1    | <1  | 30%                  | Pass           |                    |
| TRH >C34-C40                     | M18-No27374     | NCP          | mg/L  | < 0.1    | < 0.1    | <1  | 30%                  | Pass           |                    |



| Duplicate                        |             |     |      |          |          |     |     |      |     |
|----------------------------------|-------------|-----|------|----------|----------|-----|-----|------|-----|
| Volatile Organics                |             |     |      | Result 1 | Result 2 | RPD |     |      |     |
| Benzene                          | M18-No22029 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Ethylbenzene                     | M18-No22029 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| m&p-Xylenes                      | M18-No22029 | NCP | mg/L | < 0.002  | < 0.002  | <1  | 30% | Pass |     |
| o-Xylene                         | M18-No22029 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Toluene                          | M18-No22029 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Xylenes - Total                  | M18-No22029 | NCP | mg/L | < 0.003  | < 0.003  | <1  | 30% | Pass |     |
| Duplicate                        |             |     |      |          |          |     |     |      |     |
| Polycyclic Aromatic Hydrocarbons | 5           |     |      | Result 1 | Result 2 | RPD |     |      |     |
| Acenaphthene                     | M18-No25532 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Acenaphthylene                   | M18-No25532 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Anthracene                       | M18-No25532 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Benz(a)anthracene                | M18-No25532 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Benzo(a)pyrene                   | M18-No25532 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Benzo(b&j)fluoranthene           | M18-No25532 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Benzo(g.h.i)perylene             | M18-No25532 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Benzo(k)fluoranthene             | M18-No25532 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Chrysene                         | M18-No25532 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Dibenz(a.h)anthracene            | M18-No25532 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Fluoranthene                     | M18-No25532 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Fluorene                         | M18-No25532 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Indeno(1.2.3-cd)pyrene           | M18-No25532 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Naphthalene                      | M18-No25532 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Phenanthrene                     | M18-No25532 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Pyrene                           | M18-No25532 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Duplicate                        |             |     |      | r        |          |     |     |      |     |
| Heavy Metals                     |             |     |      | Result 1 | Result 2 | RPD |     |      |     |
| Arsenic                          | M18-No30209 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Cadmium                          | M18-No30209 | NCP | mg/L | < 0.0002 | < 0.0002 | <1  | 30% | Pass |     |
| Chromium                         | M18-No30209 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Copper                           | M18-No30209 | NCP | mg/L | 0.019    | 0.021    | 7.0 | 30% | Pass |     |
| Lead                             | M18-No30209 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Mercury                          | M18-No30209 | NCP | mg/L | < 0.0001 | < 0.0001 | <1  | 30% | Pass |     |
| Nickel                           | M18-No30209 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |     |
| Zinc                             | M18-No30209 | NCP | mg/L | < 0.005  | 0.006    | 53  | 30% | Fail | Q15 |



#### Comments

Eurofins | mgt accreditation number 1261, corporate site 1254 is currently in progress of a controlled transition to a new custom built location at 6 Monterey Road, Dandenong South, Victoria 3175. All results on this report denoted as being performed by Eurofins | mgt 2-5 Kingston Town Close, Oakleigh Victoria 3166 corporate site 1254, will have been performed on either Oakleigh or new Dandenong South site.

| Sample Integrity  |     |
|---|-----|
| Custody Seals Intact (if used)  | N/A |
| Attempt to Chill was evident  | Yes |
| Sample correctly preserved  | Yes |
| Appropriate sample containers have been used                            | Yes |
| Sample containers for volatile analysis received with minimal headspace | Yes |
| Samples received within HoldingTime                                     | Yes |
| Some samples have been subcontracted                                    | No  |

#### **Qualifier Codes/Comments**

Code Description

F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).

Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.

F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

N07 Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Q15 The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

#### Authorised By

| Senior Analyst-Metal (VIC)    |
|-------------------------------|
| Senior Analyst-Volatile (VIC) |
| Senior Analyst-Organic (VIC)  |
| 5                             |

hi falle

Glenn Jackson General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eurofins [mg] shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins [mg] be liable for cossquential damages including, but not limited to, ist protection and solutions, and use to be reported as expecting information or interpretation given in this report. In no case shall Eurofins [mg] be liable for consequential damages including, but not may be reported as expecting inform the report. In our case shall Eurofins, the tests were performed on the samples as received.

| ontact Person'                 | Ben Withoall                                  | ALL SAME              |  | Carl State      | A  | Project Na                     | me:                |                                 | Kyeemagh                     | Infants Scho   | loc                           |                     |            |  |                        |                    | NE MILLER ZEL SER                       |  |  |
|--------------------------------|---|-----------------------|--|-----------------|--|--------------------------------|--------------------|---------------------------------|------------------------------|----------------|-------------------------------|---------------------|------------|--|------------------------|--------------------|---|--|--|
| Jackons Number                 | 9495 8188                                     | 1.1.2.1.1.1.1         | The second second  | AND CO          |  | Project Nu                     | mber:              | 112                             | 80818157                     | Allera         |                               | 1                   | 100        |  |                        | 1                  |   |  |  |
| Reproductive Gastasti          | Inel Criffithe                                |                       | Contraction of the   | 1.1             | 1. | PO No.:                        |                    |                                 | 3                            | 111            | 1.1                           |                     |            | 1                                      | 11 1 1 1 1 1           | 11120              | 5 15 8 P. A.                            |  |  |
| ternauve Contact.              | 0406 7673                                     |                       |  |                 | -  | Project So                     | ecific Quot        | e No. 1                         | 1000                         | -              | -                             | -                   | 81029CAR   | 1                                      |                        | 012300             |   |  |  |
| siephone Number:               | 1010-1015                                     |                       |  | 1               |  | Date result                    | in required        |                                 | Standard T                   | AT             | -                             | 1000                |            |  | -                      |                    | 1202333                                 |  |  |
| ampler:                        | Joel Grimins                                  |                       | to a state   |                 |  | Desetter                       | a requires.        |                                 |                              |                | -                             | -                   | Flectronic |  |                        | -                  |   |  |  |
| mail Address (results an       | d invoice):                                   | ben.withnall@cardni   | o.com.au, joel.grittiths   | egcardno.com.au |  | Report for                     | mar:               |                                 |                              | -              | -                             | -                   | Liberonio  |  | 12.1                   | -                  |   |  |  |
| ddress: Level 9 - The For      | um, 203 Pacific Highway, St Leon              | ards, New South Wales | s 2065   | presi, inter    | and a second                             | 1.00                           | C. La Constantin   | Comments                        |                              |                |                               |                     |            |  |                        |                    |   |  |  |
| a set la care a                | C. H. S. S. Auto M.                           | Sample information    | The second second second second second second second second second second second second second second second s | Charles Party   | And a state of the                       | AD.                            | 10.10.1            | A ME                            | Sec. 3                       | Soll of        | Analysis I                    | Comments            |            |  |                        |                    |   |  |  |
| Cardno Sample ID               | Laboratory Sample ID                          | No. Containers        | Preservation   | Date<br>sampled | Matrix                                   | 7+1 -<br>RH/BTEXN/PAH/Metals 8 | 15*1 - OCP/OPP/PCB | 8-1 TRH, VOC, PAH, Metals<br>9) | H Field Screen (pH and pHfox | sbestos (w/w%) | sbestos Presence / Absence    | TTEX                | torp       |  |                        |                    |   |  |  |
| tp13 0.1                       |   | 2                     | Ice  | 17/11/2018      | Soil                                     | X                              | X                  | X                               |                              | X              | 4                             |                     |            | and the second                         | Contraction (Second    |                    |   |  |  |
| tp13_0.4                       | And disc.                                     | 2                     | lce  | 17/11/2018      | Soil                                     |                                |                    |                                 |                              | x              |                               | 1                   | 180        |  |                        | 10 and 10          |   |  |  |
| tp14_0.1                       | CALLER DE LA                                  | 2                     | lce  | 17/11/2018      | Soil                                     |                                |                    | -                               |                              | X              | 1                             |                     | 1000       |  |                        |                    |   |  |  |
| tp14_0.7                       |   | 2                     | lce  | 17/11/2018      | Soil                                     | -                              |                    | ×                               | -                            |                |                               | -                   |            |  |                        |                    |   |  |  |
| tp15_0.1                       |   | 2                     | lce  | 17/11/2018      | Soil                                     | ~                              | x                  | x                               |                              |                |                               |                     |            |  |                        | 10                 |   |  |  |
| tp15_0.8                       |   | 1                     | lce  | 17/11/2018      | Soil                                     | x                              |                    |                                 |                              | 1.50           |                               |                     |            |  |                        |                    |   |  |  |
| tp16_0.8                       | a chief and a second                          | 2                     | loe  | 17/11/2018      | Soil                                     |                                |                    | ×                               |                              |                |                               | 1                   |            |  |                        | -                  |   |  |  |
| tp17_0.1                       |   | 2                     | loe  | 17/11/2018      | Soil                                     | 100.0                          | -                  | 145-15                          |                              | X              |                               |                     |            |  | -                      |                    |   |  |  |
| tp17_0.5                       | Sa al and a second                            | 2                     | lce  | 17/11/2018      | Soil                                     | v                              | ×                  | X                               |                              | ×              | -                             | -                   |            |  | -                      |                    | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1   |  |  |
| tp18_0.1                       | - A - CARA                                    | 2                     | Ice  | 17/11/2018      | Soil                                     |                                | ^                  | X                               | -                            | ^              |                               |                     |            |  | 1. 29                  |                    |   |  |  |
| tp18_0.4                       |   | 2                     | lce  | 17/11/2018      | Soil                                     | x                              | X                  |                                 |                              | x              | 1                             |                     |            |  |                        | 2014               |   |  |  |
| tp20_0.4                       |   | 2                     | lce  | 17/11/2018      | Soil                                     | 1000                           |                    | 1000                            |                              |                |                               | 1.1.1               | X          |  | 11-1-1                 |                    |   |  |  |
| QA300                          |   | 1                     | lce  | 17/11/2018      | Soil                                     | X                              |                    | 22.0                            | -                            |                | -                             | -                   |            | 1                                      | 1                      |                    | Disses forward to ALC                   |  |  |
| QA400                          |   | 1                     | lce  | 17/11/2018      | Soll                                     | X                              |                    |                                 |                              |                |                               | -                   | ×          |  | -                      |                    | Fieldse forward to ALS                  |  |  |
| KYE_GUM                        |   | 4                     | Ice  | 17/11/2018      | Fibre Cement                             |                                |                    | 1.000                           | -                            | 1              | X                             | 1. 1.               | ^          |  |                        |                    | 100000000000000000000000000000000000000 |  |  |
| ASD2<br>KYF TB/TS              | the second second                             | 2                     | lce  | 17/11/2018      | Soil                                     |                                |                    | 1000                            |                              |                |                               | X                   | 1          |  |                        | 1.12               |   |  |  |
| BH02_0.5                       | MADE TO REALED                                | 2                     | lce  | 17/11/2018      | Soll                                     | х                              |                    | 101.0.                          | 0.00                         | X              |                               |                     |            | 1011                                   |                        | 1                  | Read West Street                        |  |  |
| BH02_1.0                       | a distant of the                              | 1                     | lce  | 17/11/2018      | Soil                                     | 12010                          | 6                  | X                               |                              | -              | -                             | -                   |            |  |                        |                    |   |  |  |
| BH03_0.5                       |   | 2                     | lce  | 17/11/2018      | Soll                                     | ×                              | -                  | -                               | -                            | X              | -                             |                     | ×          |  | -                      | -                  |   |  |  |
| BH02_2.0<br>BH02_2.0.3.45      |   | 1                     | Frozen   | 17/11/2018      | Soil                                     |                                |                    | 1000                            | x                            | -              |                               |                     | ~          | 1                                      |                        | 12                 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1   |  |  |
| BH02 4 0-4 45                  |   | 1                     | Frozen   | 17/11/2018      | Soil                                     |                                | 0.                 | 100765                          | x                            | 67.4           |                               | 12.00               |            |  | 1.00                   | 10.00              |   |  |  |
| 8401 5 5 5 05                  |   | 1                     | Frozen   | 17/11/2018      | Soil                                     |                                |                    | A STAT                          | X                            |                |                               |                     |            |  | 1284                   |                    | Chever and Party                        |  |  |
| BH02_3.3-3.93<br>BH02_7.0-7.45 |   | 1                     | Frozen   | 17/11/2018      | Soil                                     |                                |                    |                                 | x                            |                |                               | 1100                |            | 1. IT                                  |                        |                    |   |  |  |
| BH02 8.5-8.95                  | 0   | 1                     | Frozen   | 17/11/2018      | Soil                                     | 1000                           |                    | · Stan                          | ×                            |                |                               | 1.1                 | -          | 100                                    | 11 11                  |                    | 19.6                                    |  |  |
| BH02_10.0-10.45                | Market Market                                 | 1                     | Frozen   | 17/11/2018      | Soil                                     | 100                            |                    |                                 | X                            |                |                               | 1                   |            |  |                        |                    | 2. 6. 6. 6. 6. 6.                       |  |  |
| BH02_11.5-11.95                | NICOS N                                       | 1                     | Frozen   | 17/11/2018      | Soil                                     |                                |                    |                                 | ×                            |                |                               | 1000                |            |  |                        |                    |   |  |  |
| BH02_13.0-13.45                | Rolden and D                                  | 1                     | Frozen   | 17/11/2018      | Soil                                     |                                |                    | 1213                            | ×                            |                |                               |                     |            |  | -                      |                    | a stand                                 |  |  |
| BH02_14.5-14.95                |   | 1                     | Frozen   | 17/11/2018      | Soil                                     | 378                            |                    |                                 | x                            |                |                               | -                   | 12         | 5-62                                   |                        |                    | AT CARDON                               |  |  |
| BH02_16.0-16.45                |   | 1                     | Frozen   | 17/11/2018      | Soil                                     | 19.11                          |                    |                                 | X                            |                |                               | 1.                  |            | 100                                    | 1                      | 1.00               | The second second second                |  |  |
| BH02_17.5-17.95                | 18-15-18-18-18-18-18-18-18-18-18-18-18-18-18- | 1                     | Frozen   | 17/11/2018      | Soil                                     | -                              |                    | 1844                            | X                            |                |                               | -                   | 1.1        | 1                                      | -                      |                    |   |  |  |
| BH03_1.0-1.1                   |   | 1                     | Frozen   | 17/11/2018      | Soil                                     | -                              | -                  |                                 | X                            | 1              |                               | -                   |            |  | -                      |                    | 1                                       |  |  |
| BH03_2.5-2.95                  |   | 1                     | Frozen   | 1//11/2018      | Soll                                     |                                | -                  |                                 | ×                            | 1              |                               | -                   | -          |  |                        |                    | 1                                       |  |  |
| BH03_4.0-4.45                  |   | 1                     | Frozen   | 17/11/2018      | Soll                                     |                                |                    |                                 | ×                            | -              |                               | -                   | -          |  | -                      |                    |   |  |  |
| BH03_5.5-5.95                  |   | 1                     | Frozen   | 17/11/2018      | Soil                                     | 1000                           | 1                  | 1000                            | X                            | 11.197         |                               |                     |            |  |                        |                    |   |  |  |
| BH03_7.0-7.45                  |   | 1                     | Frozen   | 17/11/2010      | Soil                                     |                                | -                  | 1000                            | ×                            |                | 1                             |                     |            |  |                        | 1.1.1              |   |  |  |
| BHU3_8.5-8.95                  |   | 1                     | Frozen   | 17/11/2018      | Coll                                     | 1                              | -                  | 200                             | ×                            |                |                               |                     |            |  |                        |                    |   |  |  |
| BH03_10.0-10.45                |   | 1                     | Fiozen   | 17/11/2018      | 001                                      |                                | -                  | -                               | Ŷ                            |                | -                             |                     |            |  |                        |                    | St. C. Str KOW                          |  |  |
| BH03_11.5-11.95                |   | 1                     | Frozen   | 17/11/2018      | 301                                      | -                              | -                  | -                               | ×                            |                | -                             | -                   | -          |  | -                      |                    |   |  |  |
| inquished by:                  | Joel Griffiths                                | Received by: 4        | Eurofins   | Mat             | Relinquished by                          | 1                              |                    |                                 | <u> </u>                     | Received       | by:<br>ompany)                |                     |            |  | Relinquia<br>(name / o | hed by:<br>ompany) | See were                                |  |  |
| and recompany)                 | and the                                       | 14                    | 2/11/18 24   | SZ. PM          | Date & The                               | 8                              |                    | THE.                            | 1.000                        | Date & Th      | me                            |                     | B D        | 1000                                   | Date & To              | me:                | The second second                       |  |  |
| te & Time:                     | 19/11/18: 13:00                               | Date & Time: 1        | 2  |                 | Date & Time:                             | 100                            |                    | 725                             | 100                          | Care a li      |                               |                     |            | 1200                                   |                        |                    | 1 10 18 ( A 17 19 17 1                  |  |  |
| gnature:                       | JG Signature: Stell Million 3                 |                       | Signature:   | 200             | -  |                                | -                  | Signature: Signature:           |                              |                |                               |                     |            |  |                        |                    |   |  |  |
| oceived by:                    | Relinquished by:<br>(name / commany)          |                       | Received by: Relin   |                 |  |                                | Relinquis          | (hed by:                        |                              |                | il an s                       | Leb use;<br>Samples | Received:  | Cool or Ambient (circle one)           |                        |                    |   |  |  |
| inter company)                 | iy) (name / company)                          |                       |  |                 |  |                                |                    |                                 | Data & Time:                 |                |                               |                     |            | mperature Received at: (if applicable) |                        |                    |   |  |  |
| Charles and a second second    | k Time:                                       |                       | Date & Time: Date & Time:  |                 |  |                                |                    |                                 |                              |                | Unte & rime: Temperature Rece |                     |            |  |                        |                    |   | the state of the s |  |

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Signature

| <table-container>Image contractImage /table-container>   | sact Person:            | Ben Withmall                     |                    |                           |                 |              | Project N                    |                     |                          | Kysemagh                        | infants Sc     | hael                     |          |             |                           |       |                       |
|--|-------------------------|----------------------------------|--------------------|---------------------------|-----------------|--------------|------------------------------|---------------------|--------------------------|---------------------------------|----------------|--------------------------|----------|-------------|---------------------------|-------|-----------------------|
| Name of Contract     Note of Contract </th <th>phone Number:</th> <th>9495 6188</th> <th></th> <th></th> <th></th> <th></th> <th>Project N</th> <th>initian:</th> <th></th> <th>80818157</th> <th></th> <th></th> <th></th> <th>-</th> <th></th> <th></th> <th></th>   | phone Number:           | 9495 6188                        |                    |                           |                 |              | Project N                    | initian:            |                          | 80818157                        |                |                          |          | -           |                           |       |                       |
| Instrume         Index         Instrume         <   | mative Context:         | Joel Grittlihs                   |                    |                           |                 |              | PO No.:                      |                     |                          |                                 |                |                          |          |             |                           |       |                       |
| Interview in a lange in the second of th | phone Namber:           | 9496 7873                        |                    |                           |                 |              | Project SJ                   | ecilic Quo          | te No. :                 |                                 |                |                          |          | 181020CAR   | 4                         |       |                       |
|  | plor;                   | Joel Griffiths                   |                    |                           |                 |              | Date read                    | tis required        | 1:                       | Standard 1                      | TAT            |                          |          |             |                           |       | -                     |
|  | all Address (results ar | ni involce):                     | ben.withnai? cardn | o.com.pu: ipel. Iriffith: | s cardno.com.a  | u            | Report for                   | mat:                |                          |                                 |                |                          |          | 6 Inchesel  |                           | <br>  | -                     |
| Control Surgeb Horadio         Description         Description <thdescription<< td=""><td>ress: Level 9 - The For</td><td>um, 203 Pacific Highway, St Leos</td><td>unds. New South Wa</td><td>es 2005</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>CHEROLOGICS</td><td></td><td><br/></td><td>4</td></thdescription<<>   | ress: Level 9 - The For | um, 203 Pacific Highway, St Leos | unds. New South Wa | es 2005                   |                 |              |                              |                     |                          |                                 |                |                          |          | CHEROLOGICS |                           | <br>  | 4                     |
| Centrol Sample D         Liberative Sample D         No. Container         Preservative Ample diagonal and the second of   |                         |                                  | Sample Information |                           |                 |              |                              |                     |                          |                                 |                | Analysis                 | la minad |             |                           | <br>  | Comments              |
| Coretion Stample D         Laboratory Sample D         No. Containere         Presentation         Date         Nation         See<br>See<br>See<br>See<br>See<br>See<br>See<br>See<br>See<br>See  |                         |                                  |                    |                           |                 |              |                              |                     | 표                        | 1                               |                | 8                        |          | -           | ÷.                        | <br>- | Comments              |
| Bit A1         Part Part Part Part Part Part Part Part   | antino Sampie (D        | Laboratory Sample ID             | No. Containera     | Preservation              | Date<br>eampled | Matrix       | 17"1 -<br>RHATEXWPAHMetels 8 | 115"1 - OCP/OPP/PCB | 18°1 TRH, VOC, PAH, Mete | H Field Screen (pH and<br>Hfox) | sbeetos (w/w%) | sbeetos Presence / Absen | LEX .    | 000         | RH / TPH Silica Gel Clean |       | 6284(1                |
| up 3.4         2         isa         1771/2010         Sed         1 <th1< th=""> <th1< th=""> <th1< th=""></th1<></th1<></th1<>   | <b>\$</b> 13_0.1        |                                  | 2                  | kcə                       | 17/11/2018      | Soil         |                              | X                   | X                        | 22                              | X              | - 3                      | - 10     | Ī           | F.                        | <br>  |                       |
| askA:1         2         ke         17/12/01         Sod         N   | ψ13_0,4                 |                                  | 2                  | ka                        | 17/11/2018      | Soil         | 1 ^                          | ~                   |                          | -                               | X              |                          |          |             |                           | _     |                       |
| 994.07     2     bo     171/2018     Sold     X     X     I </td <td>tp14_0.1</td> <td></td> <td>2</td> <td>lce</td> <td>17/11/2018</td> <td>Soil</td> <td>1</td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> <td>-</td> <td></td> <td><br/>_</td> <td></td>  | tp14_0.1                |                                  | 2                  | lce                       | 17/11/2018      | Soil         | 1                            |                     |                          |                                 | X              |                          |          | -           |                           | <br>_ |                       |
| BB3.01         2         Bes         1711/2018         Soil         X  | tp14_0.7                |                                  | 2                  | los                       | 17/11/2018      | Soll         |                              |                     | X                        |                                 |                |                          |          |             |                           |       |                       |
| BB205         I <td>1015_0.1</td> <td></td> <td>2</td> <td>loe</td> <td>17/11/2018</td> <td>Sol</td> <td>X</td> <td></td>  | 1015_0.1                |                                  | 2                  | loe                       | 17/11/2018      | Sol          | X                            |                     |                          |                                 |                |                          |          |             |                           |       |                       |
| use 0.4         2         0 m         77110218         Sail         A         X         M  | to16 0.1                |                                  | 1                  | loe                       | 17/11/2018      | Soll         | v                            | X                   | X                        |                                 |                |                          |          |             |                           | <br>  |                       |
| 107.24         2         108         177112018         Soil         X  | tp16_0.8                |                                  | 2                  | los                       | 17/11/2018      | Soll         | ^                            |                     | V                        |                                 |                |                          |          |             |                           | <br>  |                       |
| untrol         2         los         17/1/2018         Soil         X  | tp17_0.1                |                                  | 2                  | lce                       | 17/11/2018      | Soll         |                              |                     | ~                        |                                 | х              |                          |          |             |                           | <br>  |                       |
| Inst. 0.4       2       Lee       171/12/01       Sold       X <td>tp17_0.5</td> <td></td> <td>2</td> <td>lce</td> <td>17/11/2018</td> <td>Şoil</td> <td></td> <td>-</td> <td>х</td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td><br/></td> <td></td>   | tp17_0.5                |                                  | 2                  | lce                       | 17/11/2018      | Şoil         |                              | -                   | х                        |                                 | -              |                          |          |             |                           | <br>  |                       |
| 982.04         2         160         1711/2018         Soil         X  | tp18_0.1                |                                  | 2                  | ka                        | 17/11/2018      | Soil         | X                            | ×                   |                          |                                 | X              |                          |          |             |                           |       |                       |
| Babba         A         K         X <td>tp16_0.4</td> <td></td> <td>2</td> <td>lce</td> <td>17/11/2018</td> <td>Soil</td> <td></td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>   | tp16_0.4                |                                  | 2                  | lce                       | 17/11/2018      | Soil         |                              |                     | X                        |                                 |                |                          |          |             |                           |       |                       |
| Ox80         1         Doc         1771/02018         Sold         X         A         A         A         Please formation           00x00         1         1         0s         1771/02018         Sold         X         A         A         A         Please formation           6400         1         1         0s         1771/02018         Water         X         A         X         A <td>620 0.4</td> <td></td> <td>2</td> <td>ice<br/>Ice</td> <td>17/11/2018</td> <td>Soil</td> <td>A A</td> <td>×</td> <td></td> <td></td> <td>X</td> <td></td> <td>_</td> <td>~</td> <td></td> <td><br/></td> <td></td>  | 620 0.4                 |                                  | 2                  | ice<br>Ice                | 17/11/2018      | Soil         | A A                          | ×                   |                          |                                 | X              |                          | _        | ~           |                           | <br>  |                       |
| Obes         1         Ich         17/17/2018         Sold         X         Ich         Ic  | QA300                   |                                  | 1                  | ice                       | 17/11/2018      | Sol          | X                            |                     |                          |                                 | _              |                          |          | ^           |                           | <br>_ |                       |
| Ref_GUM       44       Isa       171/2018       Water       Isa  | 04400                   |                                  | 1                  | lca                       | 17/11/2018      | Soll         | X                            |                     |                          |                                 |                |                          |          |             |                           | _     | Please forward to ALS |
| 482         1         Loc         1771/2018         Filter Soll         X         N  | KYE_GUM                 |                                  | 4                  | loa                       | 17/11/2018      | Water        |                              |                     |                          |                                 |                |                          |          |             | X                         |       |                       |
| Lingtons         2         108         17/11/2018         Soll         X   | 8602                    |                                  | 1                  | lce                       | 17/11/2018      | Fibre Cement |                              |                     |                          |                                 |                | X                        |          |             |                           |       |                       |
| HV02.10         1         106         17/17/2018         Sola         X  | BH02 0.5                |                                  | 2                  | los                       | 17/11/2018      | Soll         | v                            |                     |                          |                                 | ~              |                          | X        |             |                           | <br>_ |                       |
| BH03_0.5         2         106         17/11/2018         Soil         X   | 5H02_1.0                |                                  | 1                  | lca                       | 17/11/2018      | Soil         | <b>^</b>                     |                     | ×                        |                                 | ~              |                          |          |             |                           | <br>  |                       |
| BH02_20         1         Frozen         17/11/2018         Soil         X <td>BH03_0.5</td> <td></td> <td>2</td> <td>Ice</td> <td>17/11/2018</td> <td>Soil</td> <td>X</td> <td></td> <td>~</td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td><br/>-</td> <td></td>  | BH03_0.5                |                                  | 2                  | Ice                       | 17/11/2018      | Soil         | X                            |                     | ~                        |                                 | X              |                          |          |             |                           | <br>- |                       |
| BH02_20-245         1         Frozen         17/11/2018         Soil         X         Image: Constraint of the source of  | BH02_2.0                |                                  | 1                  | Frozen                    | 7/11/2018       | Soil         |                              |                     |                          |                                 |                |                          |          | X           |                           |       |                       |
| BH02_10.4.43       1       Frozen       17/11/2018       Soli       X       Image: Constraint of the solid of the s  | 8H02_2.0-2.45           |                                  | 1                  | Frozen                    | 17/11/2018      | Soil         |                              |                     |                          | X                               |                |                          |          |             |                           |       |                       |
| BH02_55.35         1         Frozen         17/11/2018         Sold         X         Image: Constraint of the state of the  | BHU2_4.0-4.45           |                                  | 1                  | Frozen                    | 17/11/2018      | Sol          |                              |                     |                          | X                               |                |                          |          |             |                           |       |                       |
| Image: Process         1         Process         1/11/2018         Soll         X         Image: Process         Image: Process <thimage: process<="" th=""> <thimage: process<="" th=""></thimage:></thimage:>   | BH02_5.5-5.95           |                                  | 1                  | Frozen                    | 17/11/2018      | Soil         |                              |                     |                          | X                               |                |                          |          |             |                           |       |                       |
| bit         bit<         bit         bit         bit <td>0H02_7.0-7.45</td> <td></td> <td>1</td> <td>Frozen</td> <td>17/11/2018</td> <td>Soll</td> <td></td> <td></td> <td></td> <td>X</td> <td>_</td> <td></td> <td></td> <td>_</td> <td></td> <td></td> <td></td>  | 0H02_7.0-7.45           |                                  | 1                  | Frozen                    | 17/11/2018      | Soll         |                              |                     |                          | X                               | _              |                          |          | _           |                           |       |                       |
| bH02_115.419.5         1         Pr02ein         17/11/2018         Soil         X         Image: Constraint of the soil         Image: Constraint of the soil in the soil         Image: Consoil in the soil  | BH02_0.3-0.85           |                                  | 1                  | Frozen                    | 17/11/2018      | Sol          |                              |                     |                          | X                               |                |                          |          |             |                           |       |                       |
| International dependence         Internation         Internati   | H02 11 5-11 95          |                                  | 4                  | Frozen                    | 17/11/2018      | 508          |                              |                     |                          | X                               |                |                          |          |             |                           |       |                       |
| Line Loos Loos         I         Prozent         Influent         Influent         X         Image: Construction of the loop of the l  | H02 13 0-13 45          |                                  |                    | Fiozen                    | 47114/0010      | 008          |                              |                     |                          | X                               |                |                          |          |             |                           | <br>_ |                       |
| bHog_16.0-16.45         1         Frozen         1/11/2018         Soll         X         Image: Constraint of the state of  | H02 14 5 44 00          |                                  |                    | FIOZER                    | 10/11/2018      | 500          |                              |                     |                          | X                               |                |                          | _        |             |                           | <br>_ |                       |
| britter         1         Frozen         17/11/2018         Soil         X         Image: Control of the state  | 14.0-14.30              |                                  | 1                  | frozen                    | 17/11/2018      | Soli         |                              |                     |                          | X                               |                |                          |          |             |                           |       |                       |
| once_inservise         1         Prozen         1/1/1/2018         Soil         X         Image: Constraint of the imag  | 10.6_16.0-16.45         |                                  | 1                  | Frozen                    | 17/11/2018      | Şoil         |                              |                     |                          | X                               |                |                          |          |             |                           |       |                       |
| Image: International Constraints         Image: Internatis         Image: International Constraints  | BH03 1 0-1 1            |                                  | 1                  | Frozen                    | 17/11/2018      | Soil         |                              |                     |                          | X                               |                |                          |          |             |                           |       |                       |
| BH03_10-4.45         1         Frozen         17/11/2018         Soll         X         Image: Constraint of the state of t  | BH03 2.5-2.95           |                                  | 1                  | Finzen                    | 17/11/2018      | HOG<br>Kož   |                              |                     |                          | X                               |                |                          |          |             |                           | <br>  |                       |
| BH03_10.9.105         1         Frozen         17/11/2018         Soil         X         Image: Control of the soil         Image: Control of the soil         Image: Control of the soil         X         Image: Control of the soil         Image: Control of the soil         Image: Control of the soil         X         Image: Control of the soil         Image: Control of the soil         Image: Control of the soil         X         Image: Control of the soil         Image: Control of the soil         Image: Control of the soil         X         Image: Control of the soil         Image: Control of the soil         Image: Control of the soil         X         Image: Control of the soil         Image: Control of the soi   | BH03 4.0-4 45           |                                  | 1                  | Feozoa                    | 17/11/2010      | ROE          |                              | _                   | _                        | ×                               |                |                          |          |             | -                         | <br>_ |                       |
| BH03_10.0-10.45         1         Frozen         17/11/2018         Soll         X         Image: Control of the state of t  | BH03 5.5-5.95           |                                  | 1                  | Fitzen                    | 17/11/2018      | Soil         |                              | -                   |                          | X                               |                |                          | _        |             |                           | <br>  |                       |
| BH03_1010.45         1         Frozen         17/11/2018         Soil         X         Image: Control of the state of th  | BH03 7.0-7.45           |                                  | 1                  | Frozen                    | 17/11/2018      | Soll         |                              | -                   |                          | ×                               | _              | _                        |          | _           | -                         | <br>  |                       |
| HV3_10.0-10.45         1         Frozen         1711/2016         Soil         X         Image: Constraint of the state of   | H03 8 5-9 95            |                                  | 1                  | Eman                      | 17/14/0545      | 000          |                              |                     |                          | X                               |                |                          | _        |             |                           | <br>_ |                       |
| BH03_11.5-11.95         1         Frozen         17/11/2018         Soli         X         I         <   |                         |                                  | 1                  | Flozen                    | 1//11/2018      | 500          |                              |                     |                          | X                               |                | _                        |          |             |                           | <br>  |                       |
| onus_11.2-11.2-11.2-11.2-11.2-11.2-11.2-11.2   | NO2 14 E 11 0F          |                                  |                    | Pluzen                    | 17/11/2018      | Soll         |                              |                     |                          | X                               |                |                          |          |             |                           |       |                       |
|  | nua_11.5-11.95          |                                  | 1                  | Frozen                    | 17/11/2018      | Şali         |                              |                     |                          | X                               |                |                          |          |             |                           |       |                       |

| Rolinguished by:              | Joel Oriffiths  | Resolved by: MANG         | Relinquished by: | Received by:     | Refinquisted by:                               |
|-------------------------------|-----------------|---------------------------|------------------|------------------|--|
| (name / company)              | Cardino         | (name / company)          | (Rese / company  | (name / company) | (name / company)                               |
| Date & Time:                  | 19/11/18: 13:00 | Data & Time: XO/11/1-540. | Pate & Time:     | Data & Time:     | Oate & Time:                                   |
| Signature:                    | JG              | Skinneture:               | Signature:       | Signature:       | Signature:                                     |
| Received by: Relinquished by: |                 | Received by:              | Ralinquished by: | Lab use:         |  |
| (name / company)              |                 | (name / company)          | (name / company  | (name / company) | Samples Received: Cool or Ambient (circle one) |
| Dale & Time:                  |                 | Date & Time:              | Dals 2 Time:     | Dala & Time:     | Vemperature Received et: (if applicable)       |
| Signature:                    |                 | Signature:                | Bigmature;       | dignature:       | Transported by: Hand delivered / courier       |

| 9                          | <b>Cardno'</b><br>Noping the Public |                        |                              |                  | HAIN (               | DF CU             | STOC           | Y ANI   | D AN                   | ALYS                       | IS RE    | <b>BUE</b> | ST                      |                         | Page 1 of 1                |
|----------------------------|-------------------------------------|------------------------|------------------------------|------------------|----------------------|-------------------|----------------|---|------------------------|----------------------------|----------|------------|-------------------------|-------------------------|----------------------------|
| Contract Baracon           | Ren Withred                         |                        |                              |                  |                      |                   |                |   |                        |                            |          |            |                         |                         |                            |
| Telechone Namber:          | 0495 6188                           |                        |                              |                  |                      | Project Num       |                | Ryee<br>area  | magh tritents :        | School                     |          |            |                         |                         |                            |
| Attantive Contact          | Joel Griffithe                      |                        |                              |                  |                      | PO No.            |                | 1906  | Vale                   |                            |          |            |                         |                         |                            |
| Telephone Mumber:          | 6466 7373                           |                        |                              |                  |                      | Prolect Smeel     | No Custo Mo    |   |                        |                            |          | 1010200200 | -                       |                         |                            |
| Semplar:                   | Joel Griffiths                      |                        |                              |                  |                      | Outo results r    | equitred:      | Stand   | ded TAT                |                            |          |            |                         |                         |                            |
| Emult Address (results an  | d Involce):                         | ben withingly in cards | no-com, au l'idel, jeillichs | eardro.com,au    |                      | Report forma      |                |   |                        |                            |          | Electronic |                         |                         |                            |
| Address: Level 9 - The For | um. 203 Paotific Mightway, St Leos  | norde, New South Wa    | tes 2065                     |                  |                      |                   |                |   |                        |                            |          |            |                         |                         |                            |
|                            |                                     | Sample Information     |                              |                  |                      |                   |                | -   |                        | Andysta                    | Required |            |                         |                         | Cottments                  |
| Cardeo Sample ID           | Laboratory Sample ID                | No. Containers         | порядения                    | Darte<br>eampled | Munitrix             | B MERONNETHWARE 0 | 804/400 - L.SK | electric (CCC, PART, 1961)<br>(6)<br>Hered Screen (pH and | (xo)H<br>(%ww) soleede | spectos Presence / Absence | X31      | סרס        | gunsel3 leð sai Cleanup |                         | 628416                     |
| (p13_0.1                   |                                     | 0                      | ice                          | 17/11/2018       | ŝoi                  | ×                 |                |   | v×<br>a                | V                          | a        | н          | 4                       |                         |                            |
| 1012.04<br>1014.01         |                                     | 0 0                    | 8 8                          | 17/11/2018       | Soli<br>Soli         |                   |                |   | ××                     |                            |          |            |                         |                         |                            |
| tp14_0.7<br>tp15_0.1       |                                     | 0 0                    | 88                           | 17/11/2018       | Sol                  | X                 |                | ×   |                        |                            |          |            |                         |                         |                            |
| 1p15_0.6                   |                                     | Ν.                     | 8                            | 17/11/2018       | 108                  | : :               | ×              | ×   |                        |                            |          |            |                         |                         |                            |
| to and                     |                                     | - 6                    | 88                           | 17/11/2018       | Sol                  | ×                 |                | ×   | _                      |                            |          |            |                         |                         |                            |
| 102744                     |                                     | 61 6                   | <b>8</b>                     | 17/11/2018       | Sol                  |                   |                | 2   | ×                      |                            |          |            |                         |                         |                            |
| to atta                    |                                     | N 64                   | 88                           | 17/11/2018       | Sol                  | ×                 | ×              | ×   | ×                      |                            |          |            |                         |                         |                            |
| 018.04                     |                                     | 0                      | 8                            | 17/11/2018       | Sol                  | :                 |                | ×   | 5                      |                            |          |            |                         |                         |                            |
| 10,024                     |                                     | 0 0                    | 81                           | 17/11/2018       | an an                | ×                 | ×              |   | ×                      |                            |          | 3          |                         |                         |                            |
| 04300                      |                                     | 4 =                    | 8                            | 17/11/2018       | to to                | ×                 |                | +   |                        |                            |          | ×          |                         |                         |                            |
| QMM00                      |                                     |                        | 8                            | 17/41/2018       | Sol                  | ×                 |                |   |                        |                            |          |            |                         |                         | Please forward to ALS      |
| KYE GUM                    |                                     | 4 -                    | 8                            | 17/11/2018       | Water                |                   |                |   |                        | ;                          |          |            | ×                       |                         |                            |
| KNE_TB/TS                  |                                     | - 21                   | 3                            | 17/11/2018       | Soil                 |                   |                |   | -                      | ×                          | ×        |            |                         |                         |                            |
| RYE RIA<br>Dates one       |                                     | -                      | 90                           | 17/11/2018       | Watter               | ;                 |                | ×   |                        |                            |          |            |                         |                         |                            |
| BH02_1.0                   |                                     | × -                    | 88                           | 17/11/2018       | No.                  | ×                 | -              | ×   | ×                      |                            |          |            |                         |                         |                            |
| 6403 0.6<br>6407 3 0       |                                     | ~ ~                    | 8                            | 17/11/2018       | Sol                  | ×                 |                |   | ×                      |                            |          |            |                         |                         |                            |
| 0H02_20-245                |                                     |                        | Frozen                       | 17/11/2018       | 8                    | T                 |                | ^   | _                      |                            |          | ×          |                         |                         |                            |
| BH02_4.0-4.45              |                                     | -                      | Frozen                       | 17/11/2016       | 301                  |                   |                | < ×   |                        |                            |          |            |                         |                         |                            |
| BH02_5.5-5.95              |                                     | ÷                      | Frozen                       | 17/11/2018       | Soil                 |                   |                | ×   |                        |                            |          |            |                         |                         |                            |
| BH02 7.0-7.45              |                                     | -                      | Frozen                       | 17/11/2018       | Soil                 |                   |                | ×   |                        |                            |          |            |                         |                         |                            |
| CO.10-CO. 20140            |                                     | -                      | Frozen                       | 17/11/2018       | Soil                 |                   |                | ×   |                        |                            |          |            |                         |                         |                            |
| BH02 11.5-11.05            |                                     |                        | Frozen<br>Eferten            | 8102/11//1       | 201<br>Good          |                   |                | ~ >   |                        |                            |          |            |                         |                         |                            |
| BH02 13.0-13.45            |                                     |                        | Pinzen                       | 17/15/20148      | Sol                  | T                 | +              | <   |                        |                            |          |            |                         |                         |                            |
| BH02_14,5-14,95            |                                     |                        | Frozen                       | 17/11/2018       | Sol                  |                   | +              |   |                        |                            |          |            |                         |                         |                            |
| BH02_16.0-16.45            |                                     | -                      | FIOZEN                       | 17/11/2018       | Soil                 |                   |                | 00  |                        |                            |          |            |                         |                         |                            |
| BH02_17.5-17.95            |                                     | F                      | Frozen                       | 17/11/2018       | Sol                  |                   |                | ×   |                        |                            |          |            |                         |                         |                            |
| BUTCH 2 6.2 ON             |                                     | - ,                    | Frozen                       | 17/11/2018       | Sol                  | +                 |                | ×   |                        |                            |          |            |                         |                         |                            |
| BHN2 4 D-4 45              |                                     | -                      | Council I                    | 0107/11//1       | 100                  | t                 | +              | × :   |                        |                            |          |            |                         |                         |                            |
| BH09 2.5-5.95              |                                     | -                      | Fritten                      | 97/11/2016       | 100                  | 1                 | -              | <   |                        |                            |          |            |                         |                         |                            |
| BH03_7.0-7.45              |                                     | F                      | Frozen                       | 17/11/2018       | Soli                 | t                 |                | < ×   |                        |                            |          |            |                         |                         |                            |
| BH03_8.5-8.96              |                                     | F                      | Frozen                       | 17/11/2018       | Solt                 |                   |                | ×   |                        |                            |          |            |                         |                         |                            |
| BH03_10.0-10.45            |                                     | F                      | Frozen                       | 17/11/2018       | Sol                  |                   |                | ×   |                        |                            |          |            |                         |                         |                            |
| BH03_11.5-11.95            |                                     | -                      | Frozen                       | 17/11/2018       | ŝoit                 |                   |                | ×   |                        |                            |          |            |                         |                         |                            |
| BH03_13.0-13.45            |                                     | -                      | Frozen                       | 17/11/2018       | Sol                  |                   |                | ×   |                        |                            |          |            |                         |                         |                            |
|                            |                                     |                        |                              |                  |                      |                   |                |   |                        |                            |          |            |                         |                         |                            |
| Refirentished by:          | oul Orthitie                        | Received by:           | 110011                       | 2                | displated by:        |                   |                |   | Received               | ula i                      |          |            |                         | Railinquistined by:     |                            |
| memo / company) (          | Induo                               | (meme / compary) /     | たち                           |                  | where i noncommunity |                   |                |   | (neme / c              | (Anedmod                   |          |            |                         | (name / company)        |                            |
| Delo & Time: 1             | GV11/18: 13:00                      | Date & Tree:           | 20/11                        | 思いつ              | flays Tienec         |                   |                |   | Date & T               |                            |          |            |                         | Dute & Time:            | · · · · · · ·              |
| B lymethape: J             |                                     | Signatura:             | N)                           | Ť                | 2 Alimput            |                   |                |   | Stighterer.            |                            |          |            |                         | 3 ignature :            |                            |
| Received by:               |                                     | Relevantshed by:       |                              | ũ                | celved by:           |                   |                |   | Redinguas              | and by:                    |          |            |                         | Lab use:                |                            |
| (nampa f contigany)        |                                     | (Aurdunos / euro)      |                              | <u> </u>         | me / company/        |                   |                |   | Internet for           | (Auedato)                  |          |            |                         | Satispiers Received: Co | ol or Ambient (circle one) |
| Date & Times:              |                                     | Onto & Tinne;          |                              | ð                | de & Three           |                   |                |   | Dete & T               | Laner.                     |          |            |                         | Temperature Received    | at: (If application)       |
| Bignature;                 |                                     | Signature:             |                              | 8                | ;ruikure;            |                   |                |   | Signature              |                            |          |            |                         | Transported by: New     | delivered / souther        |



Melbourne 3-5 Kingston Town Close Oakleigh Vic 3166 Phone : +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271

Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217

Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794

web : www.eurofins.com.au

Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 NATA # 1261 Site # 23736

ABN - 50 005 085 521 e.mail : EnviroSales@eurofins.com

# Sample Receipt Advice

Company name: Cardno (NSW/ACT) Pty Ltd Contact name: **Ben Withnall KYEEMAGH INFANTS SCHOOL** Project name: Project ID: 80818157 COC number: Not provided Turn around time: 5 Day Nov 19, 2018 2:52 PM Date/Time received: Eurofins | mgt reference: 628416

# Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Split sample sent to requested external lab.
- Some samples have been subcontracted.

N/A Custody Seals intact (if used).

# Notes

Sample QA400 forwarded to ALS.

# **Contact notes**

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Ben Withnall - ben.withnall@cardno.com.au.

Note: A copy of these results will also be delivered to the general Cardno (NSW/ACT) Pty Ltd email address.



Environmental Laboratory Air Analysis Water Analysis Soil Contamination Analysis

NATA Accreditation Stack Emission Sampling & Analysis Trade Waste Sampling & Analysis Groundwater Sampling & Analysis



38 Years of Environmental Analysis & Experience



# **CERTIFICATE OF ANALYSIS**

| Work Order              | ES1834552                               | Page                    | : 1 of 6  |
|-------------------------|---|-------------------------|---|
| Client                  | : CARDNO (NSW/ACT) PTY LTD              | Laboratory              | : Environmental Division Sydney                       |
| Contact                 | : MR BEN WITHNALL                       | Contact                 | Customer Services ES                                  |
| Address                 | : Level 9 The Forum 203 Pacific Highway | Address                 | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
|                         | St Leonards NSW 2065                    |                         |   |
| Telephone               | : +61 2 9495 8188                       | Telephone               | : +61-2-8784 8555                                     |
| Project                 | : 80818157 Kyeemagh Infants School      | Date Samples Received   | : 20-Nov-2018 12:12                                   |
| Order number            | :                                       | Date Analysis Commenced | : 22-Nov-2018   |
| C-O-C number            | :                                       | Issue Date              | : 27-Nov-2018 15:29                                   |
| Sampler                 | : JOEL GRIFFITHS                        |                         | Hac-MRA NATA  |
| Site                    | :                                       |                         |   |
| Quote number            | : EN/222 - Secondary Work               |                         | Accreditation No. 875                                 |
| No. of samples received | : 1                                     |                         | Accredited for compliance with                        |
| No. of samples analysed | : 1                                     |                         | ISO/IEC 17025 - Testing                               |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| Signatories    | Position            | Accreditation Category             |
|----------------|---------------------|------------------------------------|
| Edwandy Fadjar | Organic Coordinator | Sydney Inorganics, Smithfield, NSW |
| Edwandy Fadjar | Organic Coordinator | Sydney Organics, Smithfield, NSW   |
| Ivan Taylor    | Analyst             | Sydney Inorganics, Smithfield, NSW |



#### **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key: CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.



# Analytical Results

| Sub-Matrix: SOIL<br>(Matrix: SOIL)       |                   | Clie        | ent sample ID  | QA400             | <br> | <br> |
|--|-------------------|-------------|----------------|-------------------|------|------|
|  | Cli               | ient sampli | ng date / time | 17-Nov-2018 00:00 | <br> | <br> |
| Compound                                 | CAS Number        | LOR         | Unit           | ES1834552-001     | <br> | <br> |
|  |                   |             |                | Result            | <br> | <br> |
| EA055: Moisture Content (Dried @ 10      | 5-110°C)          |             |                |                   |      |      |
| Moisture Content                         |                   | 1.0         | %              | 1.6               | <br> | <br> |
| EG005T: Total Metals by ICP-AES          |                   |             |                |                   |      |      |
| Arsenic                                  | 7440-38-2         | 5           | mg/kg          | <5                | <br> | <br> |
| Cadmium                                  | 7440-43-9         | 1           | mg/kg          | <1                | <br> | <br> |
| Chromium                                 | 7440-47-3         | 2           | mg/kg          | <2                | <br> | <br> |
| Copper                                   | 7440-50-8         | 5           | mg/kg          | 5                 | <br> | <br> |
| Lead                                     | 7439-92-1         | 5           | mg/kg          | 21                | <br> | <br> |
| Nickel                                   | 7440-02-0         | 2           | mg/kg          | <2                | <br> | <br> |
| Zinc                                     | 7440-66-6         | 5           | mg/kg          | 22                | <br> | <br> |
| EG035T: Total Recoverable Mercury I      | by FIMS           |             |                |                   |      |      |
| Mercury                                  | 7439-97-6         | 0.1         | mg/kg          | <0.1              | <br> | <br> |
| EP075(SIM)B: Polynuclear Aromatic H      | lvdrocarbons      |             |                |                   |      |      |
| Naphthalene                              | 91-20-3           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Acenaphthylene                           | 208-96-8          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Acenaphthene                             | 83-32-9           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Fluorene                                 | 86-73-7           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Phenanthrene                             | 85-01-8           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Anthracene                               | 120-12-7          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Fluoranthene                             | 206-44-0          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Pyrene                                   | 129-00-0          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Benz(a)anthracene                        | 56-55-3           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Chrysene                                 | 218-01-9          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Benzo(b+j)fluoranthene                   | 205-99-2 205-82-3 | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Benzo(k)fluoranthene                     | 207-08-9          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Benzo(a)pyrene                           | 50-32-8           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Indeno(1.2.3.cd)pyrene                   | 193-39-5          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Dibenz(a.h)anthracene                    | 53-70-3           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Benzo(g.h.i)perylene                     | 191-24-2          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| ^ Sum of polycyclic aromatic hydrocarbor | ıs                | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| ^ Benzo(a)pyrene TEQ (zero)              |                   | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| ^ Benzo(a)pyrene TEQ (half LOR)          |                   | 0.5         | mg/kg          | 0.6               | <br> | <br> |
| ^ Benzo(a)pyrene TEQ (LOR)               |                   | 0.5         | mg/kg          | 1.2               | <br> | <br> |
| EP080/071: Total Petroleum Hydrocar      | bons              |             |                |                   |      |      |
| C6 - C9 Fraction                         |                   | 10          | mg/kg          | <10               | <br> | <br> |

| Page       | : 4 of 6                         |
|------------|----------------------------------|
| Work Order | : ES1834552                      |
| Client     | : CARDNO (NSW/ACT) PTY LTD       |
| Project    | 80818157 Kyeemagh Infants School |



# Analytical Results

| Sub-Matrix: SOIL<br>(Matrix: SOIL)        |                   | Clie        | ent sample ID  | QA400             | <br> | <br> |
|---|-------------------|-------------|----------------|-------------------|------|------|
|   | Cli               | ient sampli | ng date / time | 17-Nov-2018 00:00 | <br> | <br> |
| Compound                                  | CAS Number        | LOR         | Unit           | ES1834552-001     | <br> | <br> |
|   |                   |             |                | Result            | <br> | <br> |
| EP080/071: Total Petroleum Hydrocart      | bons - Continued  |             |                |                   |      |      |
| C10 - C14 Fraction                        |                   | 50          | mg/kg          | <50               | <br> | <br> |
| C15 - C28 Fraction                        |                   | 100         | mg/kg          | <100              | <br> | <br> |
| C29 - C36 Fraction                        |                   | 100         | mg/kg          | <100              | <br> | <br> |
| ^ C10 - C36 Fraction (sum)                |                   | 50          | mg/kg          | <50               | <br> | <br> |
| EP080/071: Total Recoverable Hydroca      | arbons - NEPM 201 | 3 Fractio   | ns             |                   |      |      |
| C6 - C10 Fraction                         | C6_C10            | 10          | mg/kg          | <10               | <br> | <br> |
| <sup>^</sup> C6 - C10 Fraction minus BTEX | C6_C10-BTEX       | 10          | mg/kg          | <10               | <br> | <br> |
| (F1)                                      |                   |             |                |                   |      |      |
| >C10 - C16 Fraction                       |                   | 50          | mg/kg          | <50               | <br> | <br> |
| >C16 - C34 Fraction                       |                   | 100         | mg/kg          | <100              | <br> | <br> |
| >C34 - C40 Fraction                       |                   | 100         | mg/kg          | <100              | <br> | <br> |
| ^ >C10 - C40 Fraction (sum)               |                   | 50          | mg/kg          | <50               | <br> | <br> |
| ^ >C10 - C16 Fraction minus Naphthalene   |                   | 50          | mg/kg          | <50               | <br> | <br> |
| (F2)                                      |                   |             |                |                   |      |      |
| EP080: BTEXN                              |                   |             |                |                   |      |      |
| Benzene                                   | 71-43-2           | 0.2         | mg/kg          | <0.2              | <br> | <br> |
| Toluene                                   | 108-88-3          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Ethylbenzene                              | 100-41-4          | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| meta- & para-Xylene                       | 108-38-3 106-42-3 | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| ortho-Xylene                              | 95-47-6           | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| ^ Sum of BTEX                             |                   | 0.2         | mg/kg          | <0.2              | <br> | <br> |
| ^ Total Xylenes                           |                   | 0.5         | mg/kg          | <0.5              | <br> | <br> |
| Naphthalene                               | 91-20-3           | 1           | mg/kg          | <1                | <br> | <br> |
| EP075(SIM)S: Phenolic Compound Su         | rrogates          |             |                |                   |      |      |
| Phenol-d6                                 | 13127-88-3        | 0.5         | %              | 98.2              | <br> | <br> |
| 2-Chlorophenol-D4                         | 93951-73-6        | 0.5         | %              | 95.2              | <br> | <br> |
| 2.4.6-Tribromophenol                      | 118-79-6          | 0.5         | %              | 56.0              | <br> | <br> |
| EP075(SIM)T: PAH Surrogates               |                   |             |                |                   |      |      |
| 2-Fluorobiphenyl                          | 321-60-8          | 0.5         | %              | 90.2              | <br> | <br> |
| Anthracene-d10                            | 1719-06-8         | 0.5         | %              | 112               | <br> | <br> |
| 4-Terphenyl-d14                           | 1718-51-0         | 0.5         | %              | 98.5              | <br> | <br> |
| EP080S: TPH(V)/BTEX Surrogates            |                   |             |                |                   |      |      |
| 1.2-Dichloroethane-D4                     | 17060-07-0        | 0.2         | %              | 95.9              | <br> | <br> |
| Toluene-D8                                | 2037-26-5         | 0.2         | %              | 106               | <br> | <br> |



# Analytical Results

| Sub-Matrix: SOIL<br>(Matrix: SOIL)    |            | Clie        | nt sample ID   | QA400             | <br> | <br> |
|---------------------------------------|------------|-------------|----------------|-------------------|------|------|
|                                       | Cli        | ent samplir | ng date / time | 17-Nov-2018 00:00 | <br> | <br> |
| Compound                              | CAS Number | LOR         | Unit           | ES1834552-001     | <br> | <br> |
|                                       |            |             |                | Result            | <br> | <br> |
| EP080S: TPH(V)/BTEX Surrogates - Cont | inued      |             |                |                   |      |      |
| 4-Bromofluorobenzene                  | 460-00-4   | 0.2         | %              | 103               | <br> | <br> |



# Surrogate Control Limits

| Sub-Matrix: SOIL                          |            | Recovery | Limits (%) |
|---|------------|----------|------------|
| Compound                                  | CAS Number | Low      | High       |
| EP075(SIM)S: Phenolic Compound Surrogates |            |          |            |
| Phenol-d6                                 | 13127-88-3 | 63       | 123        |
| 2-Chlorophenol-D4                         | 93951-73-6 | 66       | 122        |
| 2.4.6-Tribromophenol                      | 118-79-6   | 40       | 138        |
| EP075(SIM)T: PAH Surrogates               |            |          |            |
| 2-Fluorobiphenyl                          | 321-60-8   | 70       | 122        |
| Anthracene-d10                            | 1719-06-8  | 66       | 128        |
| 4-Terphenyl-d14                           | 1718-51-0  | 65       | 129        |
| EP080S: TPH(V)/BTEX Surrogates            |            |          |            |
| 1.2-Dichloroethane-D4                     | 17060-07-0 | 73       | 133        |
| Toluene-D8                                | 2037-26-5  | 74       | 132        |
| 4-Bromofluorobenzene                      | 460-00-4   | 72       | 130        |



# QUALITY CONTROL REPORT

| Work Order              | ES1834552   | Page                    | : 1 of 7                    |                                |
|-------------------------|---|-------------------------|-----------------------------|--------------------------------|
| Client                  | : CARDNO (NSW/ACT) PTY LTD                                      | Laboratory              | : Environmental Division Sy | dney                           |
| Contact                 | : MR BEN WITHNALL   | Contact                 | : Customer Services ES      |                                |
| Address                 | : Level 9 The Forum 203 Pacific Highway<br>St Leonards NSW 2065 | Address                 | : 277-289 Woodpark Road     | Smithfield NSW Australia 2164  |
| Telephone               | : +61 2 9495 8188   | Telephone               | : +61-2-8784 8555           |                                |
| Project                 | : 80818157 Kyeemagh Infants School                              | Date Samples Received   | : 20-Nov-2018               | ANULUI.                        |
| Order number            | :   | Date Analysis Commenced | : 22-Nov-2018               |                                |
| C-O-C number            | :   | Issue Date              | : 27-Nov-2018               | NATA                           |
| Sampler                 | : JOEL GRIFFITHS  |                         |                             | HALA NALA                      |
| Site                    | :   |                         |                             |                                |
| Quote number            | : EN/222 - Secondary Work                                       |                         |                             | Accreditation No. 825          |
| No. of samples received | : 1   |                         |                             | Accredited for compliance with |
| No. of samples analysed | : 1   |                         |                             | ISO/IEC 17025 - Testing        |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full. This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

#### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| Signatories    | Position            | Accreditation Category             |
|----------------|---------------------|------------------------------------|
| Edwandy Fadjar | Organic Coordinator | Sydney Inorganics, Smithfield, NSW |
| Edwandy Fadjar | Organic Coordinator | Sydney Organics, Smithfield, NSW   |
| Ivan Taylor    | Analyst             | Sydney Inorganics, Smithfield, NSW |



#### **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key: Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

# = Indicates failed QC

#### Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

| Sub-Matrix: SOIL     |                       |                            |                |           |       | Laboratory I    | Duplicate (DUP) Report |         |                     |
|----------------------|-----------------------|----------------------------|----------------|-----------|-------|-----------------|------------------------|---------|---------------------|
| Laboratory sample ID | Client sample ID      | Method: Compound           | CAS Number     | LOR       | Unit  | Original Result | Duplicate Result       | RPD (%) | Recovery Limits (%) |
| EA055: Moisture Co   | ntent (Dried @ 105-11 | 0°C) (QC Lot: 2051490)     |                |           |       |                 |                        |         |                     |
| ES1834530-001        | Anonymous             | EA055: Moisture Content    |                | 0.1       | %     | 6.9             | 7.3                    | 4.91    | No Limit            |
| ES1834551-004        | Anonymous             | EA055: Moisture Content    |                | 0.1       | %     | 7.8             | 7.5                    | 3.09    | No Limit            |
| EG005T: Total Metal  | s by ICP-AES (QC Lo   | ot: 2055623)               |                |           |       |                 |                        |         |                     |
| ES1834537-032        | Anonymous             | EG005T: Cadmium            | 7440-43-9      | 1         | mg/kg | <1              | <1                     | 0.00    | No Limit            |
|                      |                       | EG005T: Chromium           | 7440-47-3      | 2         | mg/kg | 22              | 23                     | 0.00    | 0% - 50%            |
|                      |                       | EG005T: Nickel             | 7440-02-0      | 2         | mg/kg | 12              | 13                     | 0.00    | No Limit            |
|                      |                       | EG005T: Arsenic            | 7440-38-2      | 5         | mg/kg | <5              | <5                     | 0.00    | No Limit            |
|                      |                       | EG005T: Copper             | 7440-50-8      | 5         | mg/kg | 14              | 14                     | 0.00    | No Limit            |
|                      |                       | EG005T: Lead               | 7439-92-1      | 5         | mg/kg | 9               | 9                      | 0.00    | No Limit            |
|                      |                       | EG005T: Zinc               | 7440-66-6      | 5         | mg/kg | 13              | 12                     | 0.00    | No Limit            |
| ES1834740-007 A      | Anonymous             | EG005T: Cadmium            | 7440-43-9      | 1         | mg/kg | <1              | <1                     | 0.00    | No Limit            |
|                      |                       | EG005T: Chromium           | 7440-47-3      | 2         | mg/kg | 24              | 24                     | 0.00    | 0% - 50%            |
|                      |                       |                            | EG005T: Nickel | 7440-02-0 | 2     | mg/kg           | 17                     | 17      | 0.00                |
|                      |                       | EG005T: Arsenic            | 7440-38-2      | 5         | mg/kg | 12              | 13                     | 0.00    | No Limit            |
|                      |                       | EG005T: Copper             | 7440-50-8      | 5         | mg/kg | 20              | 20                     | 0.00    | No Limit            |
|                      |                       | EG005T: Lead               | 7439-92-1      | 5         | mg/kg | 18              | 18                     | 0.00    | No Limit            |
|                      |                       | EG005T: Zinc               | 7440-66-6      | 5         | mg/kg | 68              | 68                     | 0.00    | 0% - 50%            |
| EG035T: Total Reco   | overable Mercury by F | FIMS (QC Lot: 2055622)     |                |           |       |                 |                        |         |                     |
| ES1834537-032        | Anonymous             | EG035T: Mercury            | 7439-97-6      | 0.1       | mg/kg | <0.1            | <0.1                   | 0.00    | No Limit            |
| ES1834740-007        | Anonymous             | EG035T: Mercury            | 7439-97-6      | 0.1       | mg/kg | 0.1             | 0.1                    | 0.00    | No Limit            |
| EP075(SIM)B: Polyn   | uclear Aromatic Hydr  | ocarbons (QC Lot: 2050269) |                |           |       |                 |                        |         |                     |
| ES1834551-001        | Anonymous             | EP075(SIM): Naphthalene    | 91-20-3        | 0.5       | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                       | EP075(SIM): Acenaphthylene | 208-96-8       | 0.5       | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
|                      |                       | EP075(SIM): Acenaphthene   | 83-32-9        | 0.5       | mg/kg | <0.5            | <0.5                   | 0.00    | No Limit            |
| Page       | : 3 of 7                           |
|------------|------------------------------------|
| Work Order | : ES1834552                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : 80818157 Kyeemagh Infants School |



| Sub-Matrix: SOIL      | trix: SOIL Laboratory Duplicate (DUP) F |  |            |          |       | Duplicate (DUP) Report |                  |         |                     |
|-----------------------|---|--|------------|----------|-------|------------------------|------------------|---------|---------------------|
| Laboratory sample ID  | Client sample ID                        | Method: Compound                       | CAS Number | LOR      | Unit  | Original Result        | Duplicate Result | RPD (%) | Recovery Limits (%) |
| EP075(SIM)B: Polynu   | clear Aromatic Hydrocarboi              | ns (QC Lot: 2050269) - continued       |            |          |       |                        |                  |         |                     |
| ES1834551-001         | Anonymous                               | EP075(SIM): Fluorene                   | 86-73-7    | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Phenanthrene               | 85-01-8    | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Anthracene                 | 120-12-7   | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Fluoranthene               | 206-44-0   | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Pyrene                     | 129-00-0   | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Benz(a)anthracene          | 56-55-3    | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Chrysene                   | 218-01-9   | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Benzo(b+j)fluoranthene     | 205-99-2   | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   |  | 205-82-3   |          |       |                        |                  |         |                     |
|                       |   | EP075(SIM): Benzo(k)fluoranthene       | 207-08-9   | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Benzo(a)pyrene             | 50-32-8    | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Indeno(1.2.3.cd)pyrene     | 193-39-5   | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Dibenz(a.h)anthracene      | 53-70-3    | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Benzo(g.h.i)perylene       | 191-24-2   | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Sum of polycyclic aromatic |            | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | hydrocarbons                           |            |          |       |                        |                  |         |                     |
|                       |   | EP075(SIM): Benzo(a)pyrene TEQ (zero)  |            | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
| ES1834786-001         | Anonymous                               | EP075(SIM): Naphthalene                | 91-20-3    | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Acenaphthylene             | 208-96-8   | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Acenaphthene               | 83-32-9    | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Fluorene                   | 86-73-7    | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Phenanthrene               | 85-01-8    | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Anthracene                 | 120-12-7   | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Fluoranthene               | 206-44-0   | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Pyrene                     | 129-00-0   | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Benz(a)anthracene          | 56-55-3    | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Chrysene                   | 218-01-9   | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Benzo(b+j)fluoranthene     | 205-99-2   | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   |  | 205-82-3   |          |       |                        |                  |         |                     |
|                       |   | EP075(SIM): Benzo(k)fluoranthene       | 207-08-9   | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Benzo(a)pyrene             | 50-32-8    | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Indeno(1.2.3.cd)pyrene     | 193-39-5   | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Dibenz(a.h)anthracene      | 53-70-3    | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Benzo(g.h.i)perylene       | 191-24-2   | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | EP075(SIM): Sum of polycyclic aromatic |            | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
|                       |   | hydrocarbons                           |            | <u> </u> |       | <u> </u>               |                  | • • •   | N / · · ·           |
|                       |   | EP075(SIM): Benzo(a)pyrene TEQ (zero)  |            | 0.5      | mg/kg | <0.5                   | <0.5             | 0.00    | No Limit            |
| EP080/071: Total Petr | oleum Hydrocarbons (QC I                | _ot: 2050270)                          |            |          |       |                        |                  |         |                     |
| ES1834551-001         | Anonymous                               | EP071: C15 - C28 Fraction              |            | 100      | mg/kg | <100                   | <100             | 0.00    | No Limit            |
|                       |   | EP071: C29 - C36 Fraction              |            | 100      | mg/kg | <100                   | <100             | 0.00    | No Limit            |

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|------------|------------------------------------|
| Work Order | : ES1834552                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : 80818157 Kyeemagh Infants School |



| Sub-Matrix: SOIL     |                            |                                      |            |     |       |                 |                  |         |                     |
|----------------------|----------------------------|--------------------------------------|------------|-----|-------|-----------------|------------------|---------|---------------------|
| Laboratory sample ID | Client sample ID           | Method: Compound                     | CAS Number | LOR | Unit  | Original Result | Duplicate Result | RPD (%) | Recovery Limits (%) |
| EP080/071: Total Pet | roleum Hydrocarbons (QC    | Lot: 2050270) - continued            |            |     |       |                 |                  |         |                     |
| ES1834551-001        | Anonymous                  | EP071: C10 - C14 Fraction            |            | 50  | mg/kg | <50             | <50              | 0.00    | No Limit            |
| ES1834786-001        | Anonymous                  | EP071: C15 - C28 Fraction            |            | 100 | mg/kg | <100            | <100             | 0.00    | No Limit            |
|                      |                            | EP071: C29 - C36 Fraction            |            | 100 | mg/kg | <100            | <100             | 0.00    | No Limit            |
|                      |                            | EP071: C10 - C14 Fraction            |            | 50  | mg/kg | <50             | <50              | 0.00    | No Limit            |
| EP080/071: Total Pet | roleum Hydrocarbons (QC    | Lot: 2050742)                        |            |     |       |                 |                  |         |                     |
| ES1834537-032        | Anonymous                  | EP080: C6 - C9 Fraction              |            | 10  | mg/kg | <10             | <10              | 0.00    | No Limit            |
| ES1834786-001        | Anonymous                  | EP080: C6 - C9 Fraction              |            | 10  | mg/kg | <10             | <10              | 0.00    | No Limit            |
| EP080/071: Total Re  | coverable Hydrocarbons - N | EPM 2013 Fractions (QC Lot: 2050270) |            |     |       |                 |                  |         |                     |
| ES1834551-001        | Anonymous                  | EP071: >C16 - C34 Fraction           |            | 100 | mg/kg | <100            | <100             | 0.00    | No Limit            |
|                      |                            | EP071: >C34 - C40 Fraction           |            | 100 | mg/kg | <100            | <100             | 0.00    | No Limit            |
|                      |                            | EP071: >C10 - C16 Fraction           |            | 50  | mg/kg | <50             | <50              | 0.00    | No Limit            |
| ES1834786-001        | Anonymous                  | EP071: >C16 - C34 Fraction           |            | 100 | mg/kg | <100            | <100             | 0.00    | No Limit            |
|                      |                            | EP071: >C34 - C40 Fraction           |            | 100 | mg/kg | <100            | <100             | 0.00    | No Limit            |
|                      |                            | EP071: >C10 - C16 Fraction           |            | 50  | mg/kg | <50             | <50              | 0.00    | No Limit            |
| EP080/071: Total Re  | coverable Hydrocarbons - N | EPM 2013 Fractions (QC Lot: 2050742) |            |     |       |                 |                  |         |                     |
| ES1834537-032        | Anonymous                  | EP080: C6 - C10 Fraction             | C6_C10     | 10  | mg/kg | <10             | <10              | 0.00    | No Limit            |
| ES1834786-001        | Anonymous                  | EP080: C6 - C10 Fraction             | C6_C10     | 10  | mg/kg | <10             | <10              | 0.00    | No Limit            |
| EP080: BTEXN (QC     | Lot: 2050742)              |                                      |            |     |       |                 |                  |         |                     |
| ES1834537-032        | Anonymous                  | EP080: Benzene                       | 71-43-2    | 0.2 | mg/kg | <0.2            | <0.2             | 0.00    | No Limit            |
|                      |                            | EP080: Toluene                       | 108-88-3   | 0.5 | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP080: Ethylbenzene                  | 100-41-4   | 0.5 | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP080: meta- & para-Xylene           | 108-38-3   | 0.5 | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            |                                      | 106-42-3   |     |       |                 |                  |         |                     |
|                      |                            | EP080: ortho-Xylene                  | 95-47-6    | 0.5 | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP080: Naphthalene                   | 91-20-3    | 1   | mg/kg | <1              | <1               | 0.00    | No Limit            |
| ES1834786-001        | Anonymous                  | EP080: Benzene                       | 71-43-2    | 0.2 | mg/kg | <0.2            | <0.2             | 0.00    | No Limit            |
|                      |                            | EP080: Toluene                       | 108-88-3   | 0.5 | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP080: Ethylbenzene                  | 100-41-4   | 0.5 | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP080: meta- & para-Xylene           | 108-38-3   | 0.5 | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            |                                      | 106-42-3   |     |       |                 |                  |         |                     |
|                      |                            | EP080: ortho-Xylene                  | 95-47-6    | 0.5 | mg/kg | <0.5            | <0.5             | 0.00    | No Limit            |
|                      |                            | EP080: Naphthalene                   | 91-20-3    | 1   | mg/kg | <1              | <1               | 0.00    | No Limit            |



### Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

| Sub-Matrix: SOIL                                  |                      |              | Method Blank (MB) |        | Laboratory Control Spike (LCS) Report |                    |          |            |
|---|----------------------|--------------|-------------------|--------|---------------------------------------|--------------------|----------|------------|
|   |                      |              |                   | Report | Spike                                 | Spike Recovery (%) | Recovery | Limits (%) |
| Method: Compound                                  | CAS Number           | LOR          | Unit              | Result | Concentration                         | LCS                | Low      | High       |
| EG005T: Total Metals by ICP-AES (QCLot: 2055623)  |                      |              |                   |        |                                       |                    |          |            |
| EG005T: Arsenic                                   | 7440-38-2            | 5            | mg/kg             | <5     | 21.7 mg/kg                            | 96.1               | 86       | 126        |
| EG005T: Cadmium                                   | 7440-43-9            | 1            | mg/kg             | <1     | 4.64 mg/kg                            | 97.7               | 83       | 113        |
| EG005T: Chromium                                  | 7440-47-3            | 2            | mg/kg             | <2     | 43.9 mg/kg                            | 88.7               | 76       | 128        |
| EG005T: Copper                                    | 7440-50-8            | 5            | mg/kg             | <5     | 32 mg/kg                              | 99.9               | 86       | 120        |
| EG005T: Lead                                      | 7439-92-1            | 5            | mg/kg             | <5     | 40 mg/kg                              | 95.7               | 80       | 114        |
| EG005T: Nickel                                    | 7440-02-0            | 2            | mg/kg             | <2     | 55 mg/kg                              | 98.5               | 87       | 123        |
| EG005T: Zinc                                      | 7440-66-6            | 5            | mg/kg             | <5     | 60.8 mg/kg                            | 101                | 80       | 122        |
| EG035T: Total Recoverable Mercury by FIMS (QCLo   | ot: 2055622)         |              |                   |        |                                       |                    |          |            |
| EG035T: Mercury                                   | 7439-97-6            | 0.1          | mg/kg             | <0.1   | 2.57 mg/kg                            | 81.5               | 70       | 105        |
| EP075(SIM)B: Polynuclear Aromatic Hydrocarbons(   | (QCLot: 2050269)     |              |                   |        |                                       |                    |          |            |
| EP075(SIM): Naphthalene                           | 91-20-3              | 0.5          | mg/kg             | <0.5   | 6 mg/kg                               | 93.4               | 77       | 125        |
| EP075(SIM): Acenaphthylene                        | 208-96-8             | 0.5          | mg/kg             | <0.5   | 6 mg/kg                               | 95.5               | 72       | 124        |
| EP075(SIM): Acenaphthene                          | 83-32-9              | 0.5          | mg/kg             | <0.5   | 6 mg/kg                               | 90.7               | 73       | 127        |
| EP075(SIM): Fluorene                              | 86-73-7              | 0.5          | mg/kg             | <0.5   | 6 mg/kg                               | 91.0               | 72       | 126        |
| EP075(SIM): Phenanthrene                          | 85-01-8              | 0.5          | mg/kg             | <0.5   | 6 mg/kg                               | 89.3               | 75       | 127        |
| EP075(SIM): Anthracene                            | 120-12-7             | 0.5          | mg/kg             | <0.5   | 6 mg/kg                               | 90.7               | 77       | 127        |
| EP075(SIM): Fluoranthene                          | 206-44-0             | 0.5          | mg/kg             | <0.5   | 6 mg/kg                               | 92.3               | 73       | 127        |
| EP075(SIM): Pyrene                                | 129-00-0             | 0.5          | mg/kg             | <0.5   | 6 mg/kg                               | 90.7               | 74       | 128        |
| EP075(SIM): Benz(a)anthracene                     | 56-55-3              | 0.5          | mg/kg             | <0.5   | 6 mg/kg                               | 93.6               | 69       | 123        |
| EP075(SIM): Chrysene                              | 218-01-9             | 0.5          | mg/kg             | <0.5   | 6 mg/kg                               | 90.1               | 75       | 127        |
| EP075(SIM): Benzo(b+j)fluoranthene                | 205-99-2<br>205-82-3 | 0.5          | mg/kg             | <0.5   | 6 mg/kg                               | 95.0               | 68       | 116        |
| EP075(SIM): Benzo(k)fluoranthene                  | 207-08-9             | 0.5          | mg/kg             | <0.5   | 6 mg/kg                               | 93.4               | 74       | 126        |
| EP075(SIM): Benzo(a)pyrene                        | 50-32-8              | 0.5          | mg/kg             | <0.5   | 6 mg/kg                               | 91.5               | 70       | 126        |
| EP075(SIM): Indeno(1.2.3.cd)pyrene                | 193-39-5             | 0.5          | mg/kg             | <0.5   | 6 mg/kg                               | 86.5               | 61       | 121        |
| EP075(SIM): Dibenz(a.h)anthracene                 | 53-70-3              | 0.5          | mg/kg             | <0.5   | 6 mg/kg                               | 85.7               | 62       | 118        |
| EP075(SIM): Benzo(g.h.i)perylene                  | 191-24-2             | 0.5          | mg/kg             | <0.5   | 6 mg/kg                               | 93.7               | 63       | 121        |
| EP080/071: Total Petroleum Hydrocarbons (QCLot: 2 | 2050270)             |              |                   |        |                                       |                    |          |            |
| EP071: C10 - C14 Fraction                         |                      | 50           | mg/kg             | <50    | 300 mg/kg                             | 108                | 75       | 129        |
| EP071: C15 - C28 Fraction                         |                      | 100          | mg/kg             | <100   | 450 mg/kg                             | 113                | 77       | 131        |
| EP071: C29 - C36 Fraction                         |                      | 100          | mg/kg             | <100   | 300 mg/kg                             | 108                | 71       | 129        |
| EP080/071: Total Petroleum Hydrocarbons (QCLot: 2 | 2050742)             |              |                   |        |                                       |                    |          |            |
| EP080: C6 - C9 Fraction                           |                      | 10           | mg/kg             | <10    | 26 mg/kg                              | 97.7               | 68       | 128        |
| EP080/071: Total Recoverable Hydrocarbons - NEPM  | 2013 Fractions (QCLo | ot: 2050270) |                   |        |                                       |                    |          |            |

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|------------|------------------------------------|
| Work Order | : ES1834552                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : 80818157 Kyeemagh Infants School |



| Sub-Matrix: SOIL                                |                       |                    |          | Method Blank (MB) | Laboratory Control Spike (LCS) Report |                    |          |            |  |  |
|---|-----------------------|--------------------|----------|-------------------|---------------------------------------|--------------------|----------|------------|--|--|
|   |                       |                    |          | Report            | Spike                                 | Spike Recovery (%) | Recovery | Limits (%) |  |  |
| Method: Compound                                | CAS Number            | LOR                | Unit     | Result            | Concentration                         | LCS                | Low      | High       |  |  |
| EP080/071: Total Recoverable Hydrocarbons - NEP | A 2013 Fractions (QCL | .ot: 2050270) - cc | ontinued |                   |                                       |                    |          |            |  |  |
| EP071: >C10 - C16 Fraction                      |                       | 50                 | mg/kg    | <50               | 375 mg/kg                             | 110                | 77       | 125        |  |  |
| EP071: >C16 - C34 Fraction                      |                       | 100                | mg/kg    | <100              | 525 mg/kg                             | 114                | 74       | 138        |  |  |
| EP071: >C34 - C40 Fraction                      |                       | 100                | mg/kg    | <100              | 225 mg/kg                             | 83.5               | 63       | 131        |  |  |
| EP080/071: Total Recoverable Hydrocarbons - NEP | A 2013 Fractions (QCL | .ot: 2050742)      |          |                   |                                       |                    |          |            |  |  |
| EP080: C6 - C10 Fraction                        | C6_C10                | 10                 | mg/kg    | <10               | 31 mg/kg                              | 104                | 68       | 128        |  |  |
| EP080: BTEXN (QCLot: 2050742)                   |                       |                    |          |                   |                                       |                    |          |            |  |  |
| EP080: Benzene                                  | 71-43-2               | 0.2                | mg/kg    | <0.2              | 1 mg/kg                               | 98.0               | 62       | 116        |  |  |
| EP080: Toluene                                  | 108-88-3              | 0.5                | mg/kg    | <0.5              | 1 mg/kg                               | 105                | 67       | 121        |  |  |
| EP080: Ethylbenzene                             | 100-41-4              | 0.5                | mg/kg    | <0.5              | 1 mg/kg                               | 99.5               | 65       | 117        |  |  |
| EP080: meta- & para-Xylene                      | 108-38-3              | 0.5                | mg/kg    | <0.5              | 2 mg/kg                               | 101                | 66       | 118        |  |  |
|   | 106-42-3              |                    |          |                   |                                       |                    |          |            |  |  |
| EP080: ortho-Xylene                             | 95-47-6               | 0.5                | mg/kg    | <0.5              | 1 mg/kg                               | 98.4               | 68       | 120        |  |  |
| EP080: Naphthalene                              | 91-20-3               | 1                  | mg/kg    | <1                | 1 mg/kg                               | 89.8               | 63       | 119        |  |  |

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

| Sub-Matrix: SOIL     |  |                           |            | Matrix Spike (MS) Report |                  |             |          |
|----------------------|--|---------------------------|------------|--------------------------|------------------|-------------|----------|
|                      |  |                           |            | Spike                    | SpikeRecovery(%) | Recovery Li | mits (%) |
| Laboratory sample ID | Client sample ID                               | Method: Compound          | CAS Number | Concentration            | MS               | Low         | High     |
| EG005T: Total Meta   | ils by ICP-AES (QCLot: 2055623)                |                           |            |                          |                  |             |          |
| ES1834537-032        | ES1834537-032 Anonymous                        | EG005T: Arsenic           | 7440-38-2  | 50 mg/kg                 | 90.6             | 70          | 130      |
|                      |  | EG005T: Cadmium           | 7440-43-9  | 50 mg/kg                 | 96.8             | 70          | 130      |
|                      |  | EG005T: Chromium          | 7440-47-3  | 50 mg/kg                 | 98.8             | 70          | 130      |
|                      |  | EG005T: Copper            | 7440-50-8  | 250 mg/kg                | 96.2             | 70          | 130      |
|                      |  | EG005T: Lead              | 7439-92-1  | 250 mg/kg                | 94.3             | 70          | 130      |
|                      |  | EG005T: Nickel            | 7440-02-0  | 50 mg/kg                 | 98.3             | 70          | 130      |
|                      |  | EG005T: Zinc              | 7440-66-6  | 250 mg/kg                | 100              | 70          | 130      |
| EG035T: Total Rec    | overable Mercury by FIMS (QCLot: 2055622)      |                           |            |                          |                  |             |          |
| ES1834537-032        | Anonymous                                      | EG035T: Mercury           | 7439-97-6  | 5 mg/kg                  | 103              | 70          | 130      |
| EP075(SIM)B: Poly    | nuclear Aromatic Hydrocarbons (QCLot: 2050269) |                           |            |                          |                  |             |          |
| ES1834551-001        | Anonymous                                      | EP075(SIM): Acenaphthene  | 83-32-9    | 10 mg/kg                 | 91.8             | 70          | 130      |
|                      |  | EP075(SIM): Pyrene        | 129-00-0   | 10 mg/kg                 | 93.4             | 70          | 130      |
| EP080/071: Total P   | etroleum Hydrocarbons (QCLot: 2050270)         |                           |            |                          |                  |             |          |
| ES1834551-001        | Anonymous                                      | EP071: C10 - C14 Fraction |            | 523 mg/kg                | 97.7             | 73          | 137      |
|                      |  | EP071: C15 - C28 Fraction |            | 2319 mg/kg               | 114              | 53          | 131      |

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|------------|------------------------------------|
| Work Order | : ES1834552                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : 80818157 Kyeemagh Infants School |



| Sub-Matrix: SOIL     |  |                            |            | Ма            | atrix Spike (MS) Report |             |          |
|----------------------|--|----------------------------|------------|---------------|-------------------------|-------------|----------|
|                      |  |                            |            | Spike         | SpikeRecovery(%)        | Recovery Li | mits (%) |
| Laboratory sample ID | Client sample ID                                   | Method: Compound           | CAS Number | Concentration | MS                      | Low         | High     |
| EP080/071: Total P   | etroleum Hydrocarbons (QCLot: 2050270) - continued |                            |            |               |                         |             |          |
| ES1834551-001        | Anonymous  | EP071: C29 - C36 Fraction  |            | 1714 mg/kg    | 125                     | 52          | 132      |
| EP080/071: Total P   | etroleum Hydrocarbons (QCLot: 2050742)             |                            |            |               |                         |             |          |
| ES1834537-032        | Anonymous  | EP080: C6 - C9 Fraction    |            | 32.5 mg/kg    | 117                     | 70          | 130      |
| EP080/071: Total R   | ecoverable Hydrocarbons - NEPM 2013 Fractions (QCL | ot: 2050270)               |            |               |                         |             |          |
| ES1834551-001        | Anonymous  | EP071: >C10 - C16 Fraction |            | 860 mg/kg     | 100                     | 73          | 137      |
|                      |  | EP071: >C16 - C34 Fraction |            | 3223 mg/kg    | 117                     | 53          | 131      |
|                      |  | EP071: >C34 - C40 Fraction |            | 1058 mg/kg    | 116                     | 52          | 132      |
| EP080/071: Total R   | ecoverable Hydrocarbons - NEPM 2013 Fractions (QCL | ot: 2050742)               |            |               |                         |             |          |
| ES1834537-032        | Anonymous  | EP080: C6 - C10 Fraction   | C6_C10     | 37.5 mg/kg    | 121                     | 70          | 130      |
| EP080: BTEXN (QC     | CLot: 2050742)                                     |                            |            |               |                         |             |          |
| ES1834537-032        | Anonymous  | EP080: Benzene             | 71-43-2    | 2.5 mg/kg     | 111                     | 70          | 130      |
|                      |  | EP080: Toluene             | 108-88-3   | 2.5 mg/kg     | 115                     | 70          | 130      |
|                      |  | EP080: Ethylbenzene        | 100-41-4   | 2.5 mg/kg     | 110                     | 70          | 130      |
|                      |  | EP080: meta- & para-Xylene | 108-38-3   | 2.5 mg/kg     | 109                     | 70          | 130      |
|                      |  |                            | 106-42-3   |               |                         |             |          |
|                      |  | EP080: ortho-Xylene        | 95-47-6    | 2.5 mg/kg     | 106                     | 70          | 130      |
|                      |  | EP080: Naphthalene         | 91-20-3    | 2.5 mg/kg     | 89.7                    | 70          | 130      |



|              | QA/QC Compliance A                 | ssessment to assist with | n Quality Review                |  |
|--------------|------------------------------------|--------------------------|---------------------------------|--|
| Work Order   | ES1834552                          | Page                     | : 1 of 4                        |  |
| Client       | : CARDNO (NSW/ACT) PTY LTD         | Laboratory               | : Environmental Division Sydney |  |
| Contact      | : MR BEN WITHNALL                  | Telephone                | : +61-2-8784 8555               |  |
| Project      | : 80818157 Kyeemagh Infants School | Date Samples Received    | : 20-Nov-2018                   |  |
| Site         | :                                  | Issue Date               | : 27-Nov-2018                   |  |
| Sampler      | : JOEL GRIFFITHS                   | No. of samples received  | : 1                             |  |
| Order number | :                                  | No. of samples analysed  | : 1                             |  |

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

# Summary of Outliers

### **Outliers : Quality Control Samples**

This report highlights outliers flagged in the Quality Control (QC) Report.

- <u>NO</u> Method Blank value outliers occur.
- <u>NO</u> Duplicate outliers occur.
- <u>NO</u> Laboratory Control outliers occur.
- <u>NO</u> Matrix Spike outliers occur.
- For all regular sample matrices, <u>NO</u> surrogate recovery outliers occur.

### **Outliers : Analysis Holding Time Compliance**

• NO Analysis Holding Time Outliers exist.

### **Outliers : Frequency of Quality Control Samples**

• <u>NO</u> Quality Control Sample Frequency Outliers exist.



### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

| Matrix: SOIL  |                                      |                |                    | Evaluation | : × = Holding time | breach ; 🗸 = Withi | in holding time. |
|---|--------------------------------------|----------------|--------------------|------------|--------------------|--------------------|------------------|
| Method  | Sample Date Extraction / Preparation |                |                    |            |                    | Analysis           |                  |
| Container / Client Sample ID(s)                                 |                                      | Date extracted | Due for extraction | Evaluation | Date analysed      | Due for analysis   | Evaluation       |
| EA055: Moisture Content (Dried @ 105-110°C)                     |                                      |                |                    |            |                    |                    |                  |
| Soil Glass Jar - Unpreserved (EA055)<br>QA400                   | 17-Nov-2018                          |                |                    |            | 22-Nov-2018        | 01-Dec-2018        | ✓                |
| EG005T: Total Metals by ICP-AES                                 |                                      |                |                    |            |                    |                    |                  |
| Soil Glass Jar - Unpreserved (EG005T)<br>QA400                  | 17-Nov-2018                          | 24-Nov-2018    | 16-May-2019        | 1          | 26-Nov-2018        | 16-May-2019        | ✓                |
| EG035T: Total Recoverable Mercury by FIMS                       |                                      |                |                    |            |                    |                    |                  |
| Soil Glass Jar - Unpreserved (EG035T)<br>QA400                  | 17-Nov-2018                          | 24-Nov-2018    | 15-Dec-2018        | 1          | 26-Nov-2018        | 15-Dec-2018        | ~                |
| EP075(SIM)B: Polynuclear Aromatic Hydrocarbons                  |                                      |                |                    |            |                    |                    |                  |
| Soil Glass Jar - Unpreserved (EP075(SIM))<br>QA400              | 17-Nov-2018                          | 22-Nov-2018    | 01-Dec-2018        | 4          | 23-Nov-2018        | 01-Jan-2019        | ✓                |
| EP080/071: Total Petroleum Hydrocarbons                         |                                      |                |                    |            |                    |                    |                  |
| Soil Glass Jar - Unpreserved (EP071)<br>QA400                   | 17-Nov-2018                          | 22-Nov-2018    | 01-Dec-2018        | 1          | 23-Nov-2018        | 01-Jan-2019        | ✓                |
| Soil Glass Jar - Unpreserved (EP080)<br>QA400                   | 17-Nov-2018                          | 22-Nov-2018    | 01-Dec-2018        | 1          | 26-Nov-2018        | 01-Dec-2018        | ✓                |
| EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions |                                      |                |                    |            |                    |                    |                  |
| Soil Glass Jar - Unpreserved (EP071)<br>QA400                   | 17-Nov-2018                          | 22-Nov-2018    | 01-Dec-2018        | 1          | 23-Nov-2018        | 01-Jan-2019        | ✓                |
| Soil Glass Jar - Unpreserved (EP080)<br>QA400                   | 17-Nov-2018                          | 22-Nov-2018    | 01-Dec-2018        | 1          | 26-Nov-2018        | 01-Dec-2018        | ✓                |
| EP080: BTEXN  |                                      |                |                    |            |                    |                    |                  |
| Soil Glass Jar - Unpreserved (EP080)<br>QA400                   | 17-Nov-2018                          | 22-Nov-2018    | 01-Dec-2018        | 1          | 26-Nov-2018        | 01-Dec-2018        | ✓                |



# **Quality Control Parameter Frequency Compliance**

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

| Matrix: SOIL                     |            |    |         | Evaluatio | on: × = Quality Co | ntrol frequency | not within specification ; $\checkmark$ = Quality Control frequency within specification. |
|----------------------------------|------------|----|---------|-----------|--------------------|-----------------|---|
| Quality Control Sample Type      |            | С  | ount    |           | Rate (%)           |                 | Quality Control Specification   |
| Analytical Methods               | Method     | QC | Reaular | Actual    | Expected           | Evaluation      |   |
| Laboratory Duplicates (DUP)      |            |    |         |           |                    |                 |   |
| Moisture Content                 | EA055      | 2  | 20      | 10.00     | 10.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| PAH/Phenols (SIM)                | EP075(SIM) | 2  | 18      | 11.11     | 10.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Total Mercury by FIMS            | EG035T     | 2  | 20      | 10.00     | 10.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Total Metals by ICP-AES          | EG005T     | 2  | 20      | 10.00     | 10.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| TRH - Semivolatile Fraction      | EP071      | 2  | 19      | 10.53     | 10.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| TRH Volatiles/BTEX               | EP080      | 2  | 20      | 10.00     | 10.00              | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Laboratory Control Samples (LCS) |            |    |         |           |                    |                 |   |
| PAH/Phenols (SIM)                | EP075(SIM) | 1  | 18      | 5.56      | 5.00               | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Total Mercury by FIMS            | EG035T     | 1  | 20      | 5.00      | 5.00               | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Total Metals by ICP-AES          | EG005T     | 1  | 20      | 5.00      | 5.00               | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| TRH - Semivolatile Fraction      | EP071      | 1  | 19      | 5.26      | 5.00               | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| TRH Volatiles/BTEX               | EP080      | 1  | 20      | 5.00      | 5.00               | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Method Blanks (MB)               |            |    |         |           |                    |                 |   |
| PAH/Phenols (SIM)                | EP075(SIM) | 1  | 18      | 5.56      | 5.00               | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Total Mercury by FIMS            | EG035T     | 1  | 20      | 5.00      | 5.00               | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Total Metals by ICP-AES          | EG005T     | 1  | 20      | 5.00      | 5.00               | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| TRH - Semivolatile Fraction      | EP071      | 1  | 19      | 5.26      | 5.00               | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| TRH Volatiles/BTEX               | EP080      | 1  | 20      | 5.00      | 5.00               | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Matrix Spikes (MS)               |            |    |         |           |                    |                 |   |
| PAH/Phenols (SIM)                | EP075(SIM) | 1  | 18      | 5.56      | 5.00               | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Total Mercury by FIMS            | EG035T     | 1  | 20      | 5.00      | 5.00               | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| Total Metals by ICP-AES          | EG005T     | 1  | 20      | 5.00      | 5.00               | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| TRH - Semivolatile Fraction      | EP071      | 1  | 19      | 5.26      | 5.00               | ✓               | NEPM 2013 B3 & ALS QC Standard  |
| TRH Volatiles/BTEX               | EP080      | 1  | 20      | 5.00      | 5.00               | 1               | NEPM 2013 B3 & ALS QC Standard  |



# **Brief Method Summaries**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods   | Method     | Matrix | Method Descriptions   |
|--|------------|--------|---|
| Moisture Content   | EA055      | SOIL   | In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).  |
| Total Metals by ICP-AES                                    | EG005T     | SOIL   | In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)  |
| Total Mercury by FIMS                                      | EG035T     | SOIL   | In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS)<br>FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an<br>appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then<br>purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This<br>method is compliant with NEPM (2013) Schedule B(3) |
| TRH - Semivolatile Fraction                                | EP071      | SOIL   | In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.   |
| PAH/Phenols (SIM)  | EP075(SIM) | SOIL   | In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)   |
| TRH Volatiles/BTEX   | EP080      | SOIL   | In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.   |
| Preparation Methods  | Method     | Matrix | Method Descriptions   |
| Hot Block Digest for metals in soils sediments and sludges | EN69       | SOIL   | In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)   |
| Methanolic Extraction of Soils for Purge and Trap          | ORG16      | SOIL   | In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.   |
| Tumbler Extraction of Solids                               | ORG17      | SOIL   | In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.  |

| Signature:        | Date & Time:    | (name / company) | Received by:     | Signature: | Date & Time:    | (name / company) | Relinquished by: | Cardno Sample ID   |                           | Address: Level 9 - The F         | Emall Address (results a  | Sampler:           | Telephone Number:              | Alternative Contact: | Telephone Number:           | Contact Person:           | 9  |
|-------------------|-----------------|------------------|------------------|------------|-----------------|------------------|------------------|--|---------------------------|----------------------------------|---------------------------|--------------------|--------------------------------|----------------------|-----------------------------|---------------------------|--|
|                   |                 |                  |                  | JG         | 17/11/18: 13:00 | Gardno           | Joel Griffiths   | Laboratory Sample ID   |                           | orum, 203 Pacific Highway. St Le | and Involce):             | Joel Griffiths     | 9496 7873                      | Joel Griffths        | 9495 8168                   | Ben Withnali              | <b>Cardno</b> <sup>®</sup><br>Shaping the Feture |
| Signature:        | Date & Time:    | (name / company) | Relinquished by: | Signature: | Date & Time:    | (name / company) | Received by:     | No. Containers   | Sample Information        | onards, New South W              | ben.withnali@gardno       |                    |                                |                      |                             |                           |  |
|                   |                 |                  |                  |            |                 |                  |                  | Preservation   |                           | ales 2065                        | a.com.au; joel.griffiths@ |                    |                                |                      |                             |                           |  |
| 0                 |                 |                  | <u></u>          |            |                 | 6                | 7                | Date<br>sampled  |                           |                                  | <u>Pcardno.com.au</u>     |                    |                                |                      |                             |                           | 0  |
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|                   |                 |                  |                  |            |                 |                  |                  | B7*1 -<br>XRH/BTEXN/PAH/Metals 8   |                           |                                  | Report format:            | Date results requi | <sup>o</sup> rojact Spacific G | PO No.:              | <sup>o</sup> roject Number: | <sup>o</sup> rofect Name: | OF CUS   |
|                   |                 |                  |                  |            |                 |                  |                  |  |                           |                                  |                           | red:               | note No. :                     |                      |                             |                           | TODY A   |
| Signal            | Deta 8          | Iname            | Reling           | Signat     | Date 8          | (name            | Receit           |  |                           |                                  |                           | Standard TAT       |                                |                      | 80818157                    | Kyeemagh Infants          | ND AN.   |
| ure:              | , Time:         | / company)       | uished by:       | ure:       | : Times         | / company)       | ed by:           |  | Analysis Re               |                                  |                           |                    |                                |                      |                             | Sahool                    | <b>ALYSIS</b>                                    |
|                   |                 |                  |                  |            |                 |                  |                  |  | quired                    |                                  | Electror                  |                    | 18102907                       |                      |                             |                           | REQU   |
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| / courier         | (if applicabl   | fent (circle one |                  |            |                 |                  |                  |  | Commen                    |                                  |                           |                    |                                |                      |                             |                           | -  |
|                   | é               | ÷                |                  |            |                 |                  |                  |  | <b>8</b> .<br>            |                                  |                           |                    |                                |                      |                             |                           | 9f<br>-1   |

| ered frouvfer        | Transported by: Hand daily                    |           |                   | Signature;       |             |                   | ľ             | Habura:                        | 1010         |                         | ignejako:             | 9.3.6                              | Bignatary; Carper          |
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|                      | Lab tist:                                     |           | ž                 | Ralkmuteted      | >           | ×<br>۲            | Ŋ             |                                | 77           |                         | alfindbished by:      |                                    | Received by: Soo           |
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|                      | +   |           |                   |                  | (×          |                   | +-            | : ¥                            | 7/11/2018    | Frozen                  | • •                   |                                    | BH03_10.0-10.45            |
|                      |   |           |                   |                  | ×           |                   | ŀ             | 501<br>-                       | 7/11/2018    | Frozen 1                | *                     |                                    | BH03_8.5-8.05              |
|                      |   |           |                   |                  | ×           |                   |               | Soil                           | 7/11/2018    | Frozen 1                | -                     |                                    | BH03_7.0-7.45              |
|                      |   |           |                   |                  | ×''         |                   | ╉             |                                | 7/11/2019    | Frozen 1                | -<br>                 |                                    | BM03_53-5.95               |
|                      |   |           | +                 | +                | <<br><      |                   | -             |                                | 51021171     | Frozen   1              | • •                   |                                    | BH03_2.0-2.80              |
|                      |   |           |                   |                  | . ×         |                   | ╎             | 50                             | 7711/2018    | Fitozan                 | • •                   |                                    | EHQ4 1.0-1.1               |
|                      |   |           |                   |                  | ×           |                   |               | ġой                            | 7/11/2018    | frozen 1                | -                     |                                    | 6402_17.5-17.95            |
|                      |   |           | _                 |                  | ×           | -                 |               | 5°                             | 7/11/2018    | Ftuzen 1                | -                     |                                    | EH02_16.0-16.46            |
|                      |   |           |                   |                  | ×           | -+                | -             | Sol                            | 7/11/2018    | Frozen 1                | -                     |                                    | BH02_14.5-14.85            |
| -                    | :   |           |                   | -                | ×           |                   | -             | Sol                            | 7/11/2018    | Frozen 1                |                       |                                    | 8H02_13.0-13.45            |
| ALS CIOWS NEST       |   |           |                   |                  | ×Ì          | -                 | +             |                                | 7/11/2018    | Frozen 1                |                       |                                    | BH02 14.5-11.25            |
| ALC Crown North      |   |           |                   |                  | - ×         | + -               | +             |                                | 7/11/2018    | Enton                   |                       |                                    | AHUZ_ND-0.50               |
| WO # Assigned at     |   |           |                   |                  | ×           |                   |               | 9oil                           | 7/11/2018    | Frozen                  |                       |                                    | 8H02_7.0-7.45              |
| 1111                 |   |           |                   |                  | ×           | -                 |               | 90a                            | 7/11/2018    | Frozen 1                | _ <b>_</b>            |                                    | \$H01_515-5195             |
| し、こしたとどで             | 1   |           |                   |                  | ×           |                   |               | 50Å                            | 7/11/2018    | Frozen 1                | ·                     |                                    | BH02_4,0-4,45              |
| 130-110              | 4   | ,         |                   |                  | ×           | -                 | +             | ŝ                              | 7/11/2018    | Fibzian                 |                       |                                    | BH02_2.0-2.45              |
| -                    |   |           |                   | ×                | •           |                   |               |                                | 7/11/2018    |                         | - 10                  |                                    | BH03 0.6                   |
|                      |   | -         |                   |                  |             | ×                 |               | 50<br>2                        | 7/11/2018    | 8                       | _^                    |                                    | 8H02_1.0                   |
|                      |   |           |                   | ×                |             |                   | ^             | Sali                           | 7/11/2018    | <b>B</b>                | 2                     |                                    | BH02 0.5                   |
|                      | -   |           | ×                 |                  |             |                   | +             | de Cener                       | 7/11/2018    |                         | 2-                    |                                    | KYE TB/TS                  |
|                      |   | *         | -                 |                  |             |                   | +             | Water                          | 7/11/2018    |                         | •••                   |                                    | KYE GUM                    |
| lease forward to ALC | 5   |           |                   |                  |             |                   | ŕ             | Sol                            | 7/11/2018    | 1 <del>3</del> 2        |                       |                                    | 04400                      |
|                      |   |           |                   |                  |             | _                 | ^             | 802 -                          | 7/11/2018    | ġ                       |                       |                                    | 00670                      |
|                      | -   | ×         |                   | >                |             |                   | ,             | 801<br>                        | 7/11/2018    | 2                       | ~ ~                   |                                    | 1020 0A                    |
|                      |   |           |                   |                  |             | ×                 |               | 2<br>2<br>2<br>2               | 7/11/2018    | 8                       |                       |                                    | TT 18_0.4                  |
|                      |   |           |                   | ×                |             |                   | ~<br>V        | Soli                           | 7/11/2018    | 2                       | 2                     |                                    | tp18_0.1                   |
|                      |   |           |                   | ;                | 1           | ×                 | -             | Soil                           | 7/11/2018    | <u>स</u> त              | ~                     |                                    | tp17_05                    |
|                      |   | +         |                   | ×                |             | ,                 | +             | 200<br>200                     | 21/11/2018   | t B                     |                       |                                    | 1015_0.8                   |
|                      |   |           |                   |                  | -           |                   | ŕ             | Soil                           | 7/11/2018    | Ť                       | )                     |                                    | tp16_0.1                   |
|                      |   | -         |                   |                  |             | ×                 | L.            | Sol                            | 7/11/2018    |                         | 2                     |                                    | 4015_0.6                   |
|                      |   |           |                   |                  |             |                   | <u>^</u>      | Sol                            | 7/11/2018    | - <del>3</del> 3        | 2                     |                                    | hp15_0.1                   |
|                      |   |           |                   | ,                |             | ×                 |               |                                | 7/11/2018    | 88                      | 2                     |                                    | 1014 0.7                   |
|                      |   |           |                   | < ×              | +-          | +                 | +             | 8                              | 7/11/2018    | 8                       | یہ د<br>              |                                    | 40.61¢                     |
|                      |   |           |                   | ~                |             | ×                 |               | 60<br>Ori                      | 7/11/2018    | 8                       | 2                     |                                    | 10 E14                     |
|                      |   | ноцр      | Asbeatos<br>BTIEX | Asbestos         | pit Field : | 848+1 TR1+<br>(6) | TRH/BTE       | <b>97*1 -</b>                  |              |                         |                       |                                    |                            |
|                      |   |           | Presen            | (w/w%)           | Screen (    | i. voc,           | XN/PAH        | Watrix                         | sumpled      | Preservation            | No, Containers:       | Luboratory Sample 20               | Cardno Sample ID           |
|                      |   |           | e / Abse          |                  | pH and p    | PAH, Mə           | /Metals &     |                                | 2            |                         |                       |                                    |                            |
|                      |   |           | ,1C8:             |                  | <br>Htox)   | e                 | ۱<br>         |                                |              |                         |                       |                                    |                            |
| Comments             |   |           | nitysia Raquinad  |                  |             |                   |               |                                |              |                         | arapia informațioe    | 9                                  |                            |
|                      |   |           |                   |                  |             |                   |               |                                | acano.com.av | tomawi keesetiriiniises | ta, New Boulh Water 2 | n, 200 Pacific Highway, St Leonard | Address: Level 9 - The For |
| •••                  |   |           |                   | 30.1             |             |                   |               |                                |              |                         |                       |                                    | Bannipeer:                 |
|                      |   | HOZHCAR_1 |                   | 11               | 12/12/20    | Queta No. :       | eat Speatho   | Prot                           |              |                         |                       | MBB 7873                           | Talaphone Humber:          |
|                      |   |           |                   |                  |             |                   |               | POz                            |              |                         |                       | Losi Gramera                       | Allemative Contact:        |
|                      |   | -         |                   |                  | 8081815     |                   | nst Number    | म्ब                            |              |                         |                       | 9495 8188                          | Telephone Nomber:          |
|                      |   |           |                   | h inbinds Bahool | Kysenag     |                   | ect Name:     | bud                            |              |                         |                       | San Wilmai                         | Contact Persons            |
|                      |   |           |                   |                  |             |                   |               |                                |              |                         |                       | emas Ath Buide                     |                            |
| а<br>я<br>1          | 3   | QUEST     | <b>YSIS RE</b>    | ANAL             | AND         | TODY              | CUS           | HAIN OF                        | c            |                         |                       | Serdno                             |                            |
|                      |   | ļ         |                   |                  |             |                   |               |                                |              |                         |                       | I                                  | )                          |
|                      |   |           |                   |                  |             |                   |               |                                | ,            |                         |                       |                                    |                            |

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Cardno (NSW/ACT) Pty Ltd Level 9, 203 Pacific Highway St Leonards NSW 2065





NATA Accredited Accreditation Number 1261 Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

### Attention:

Ben Withnall

Report Project name Project ID Received Date 630561-S KYEEMAGH INFANTS SCHOOL 80818157 Nov 28, 2018

| Client Sample ID  |      |            | BH02_4.0-4.45 | BH02_7.0-7.45 | BH02_11.5-<br>11.95 | BH03_8.5-8.95 |
|---|------|------------|---------------|---------------|---------------------|---------------|
| Sample Matrix   |      |            | Soil          | Soil          | Soil                | Soil          |
| Eurofins   mgt Sample No.                                     |      |            | B18-No41456   | B18-No41457   | B18-No41458         | B18-No41459   |
| Date Sampled  |      |            | Nov 17, 2018  | Nov 17, 2018  | Nov 17, 2018        | Nov 17, 2018  |
| Test/Reference  | LOR  | Unit       |               |               |                     | ,             |
| SPOCAS Suite  | 2010 | Onit       |               |               |                     |               |
| pH-KCL  | 0.1  | pH Units   | 5.9           | 9.1           | 9.3                 | 9.3           |
| pH-OX   | 0.1  | pH Units   | 7.2           | 7.2           | 7.4                 | 7.5           |
| Acid trail - Titratable Actual Acidity                        | 2    | mol H+/t   | < 2           | < 2           | < 2                 | < 2           |
| Acid trail - Titratable Peroxide Acidity                      | 2    | mol H+/t   | < 2           | < 2           | < 2                 | < 2           |
| Acid trail - Titratable Sulfidic Acidity                      | 2    | mol H+/t   | < 2           | < 2           | < 2                 | < 2           |
| sulfidic - TAA equiv. S% pyrite                               | 0.02 | % pyrite S | < 0.02        | < 0.02        | < 0.02              | < 0.02        |
| sulfidic - TPA equiv. S% pyrite                               | 0.02 | % pyrite S | < 0.02        | < 0.02        | < 0.02              | < 0.02        |
| sulfidic - TSA equiv. S% pyrite                               | 0.02 | % pyrite S | < 0.02        | < 0.02        | < 0.02              | < 0.02        |
| Sulfur - KCI Extractable                                      | 0.02 | % S        | < 0.02        | 0.05          | < 0.02              | 0.02          |
| Sulfur - Peroxide   | 0.02 | % S        | 0.24          | 0.10          | 0.09                | 0.37          |
| Sulfur - Peroxide Oxidisable Sulfur                           | 0.02 | % S        | 0.24          | 0.06          | 0.09                | 0.35          |
| acidity - Peroxide Oxidisable Sulfur                          | 10   | mol H+/t   | 150           | 34            | 54                  | 220           |
| HCI Extractable Sulfur  | 0.02 | % S        | n/a           | n/a           | n/a                 | n/a           |
| Net Acid soluble sulfur                                       | 0.02 | % S        | n/a           | n/a           | n/a                 | n/a           |
| Net Acid soluble sulfur - acidity units                       | 10   | mol H+/t   | n/a           | n/a           | n/a                 | n/a           |
| Net Acid soluble sulfur - equivalent S% pyrite <sup>S02</sup> | 0.02 | % S        | n/a           | n/a           | n/a                 | n/a           |
| Calcium - KCI Extractable                                     | 0.02 | % Ca       | < 0.02        | 0.19          | 0.10                | 0.15          |
| Calcium - Peroxide  | 0.02 | % Ca       | 0.60          | 0.25          | 0.24                | 0.69          |
| Acid Reacted Calcium  | 0.02 | % Ca       | 0.60          | 0.06          | 0.13                | 0.54          |
| acidity - Acid Reacted Calcium                                | 10   | mol H+/t   | 300           | 28            | 67                  | 270           |
| sulfidic - Acid Reacted Ca equiv. S% pyrite                   | 0.02 | % S        | 0.48          | 0.04          | 0.11                | 0.43          |
| Magnesium - KCI Extractable                                   | 0.02 | % Mg       | < 0.02        | < 0.02        | < 0.02              | 0.04          |
| Magnesium - Peroxide  | 0.02 | % Mg       | < 0.02        | 0.03          | 0.02                | 0.08          |
| Acid Reacted Magnesium  | 0.02 | % Mg       | < 0.02        | 0.03          | 0.02                | 0.04          |
| acidity - Acid Reacted Magnesium                              | 10   | mol H+/t   | < 10          | 23            | 20                  | 33            |
| sulfidic - Acid Reacted Mg equiv. S% pyrite                   | 0.02 | % S        | < 0.02        | 0.04          | 0.03                | 0.05          |
| Acid Neutralising Capacity (ANCE)                             | 0.02 | %CaCO3     | 0.42          | 0.21          | 0.24                | 0.38          |
| Acid Neutralising Capacity - Acidity units (a-ANCE)           | 10   | mol H+/t   | 84            | 42            | 47                  | 77            |
| Acid Neutralising Capacity - equivalent S% pyrite(s-<br>ANCE) | 0.02 | % S        | 0.13          | 0.07          | 0.08                | 0.12          |
| ANC Fineness Factor   |      | factor     | 1.5           | 1.5           | 1.5                 | 1.5           |
| SPOCAS - Net Acidity (Sulfur Units)                           | 0.02 | % S        | 0.24          | < 0.02        | < 0.02              | 0.03          |
| SPOCAS - Net Acidity (Acidity Units)                          | 10   | mol H+/t   | 150           | < 10          | < 10                | 22            |
| SPOCAS - Liming rate  | 1    | kg CaCO3/t | 11            | < 1           | < 1                 | 2.0           |



| Client Sample ID   |       |            | BH02_4.0-4.45 | BH02_7.0-7.45 | BH02_11.5-<br>11.95 | BH03_8.5-8.95 |
|--|-------|------------|---------------|---------------|---------------------|---------------|
| Sample Matrix  |       |            | 5011          | 5011          | 5011                | 5011          |
| Eurofins   mgt Sample No.  |       |            | B18-No41456   | B18-No41457   | B18-No41458         | B18-No41459   |
| Date Sampled   |       |            | Nov 17, 2018  | Nov 17, 2018  | Nov 17, 2018        | Nov 17, 2018  |
| Test/Reference   | LOR   | Unit       |               |               |                     |               |
| Chromium Suite   |       |            |               |               |                     |               |
| pH-KCL   | 0.1   | pH Units   | 5.9           | 9.1           | 9.3                 | 9.3           |
| Acid trail - Titratable Actual Acidity   | 2     | mol H+/t   | < 2           | < 2           | < 2                 | < 2           |
| sulfidic - TAA equiv. S% pyrite  | 0.02  | % pyrite S | < 0.02        | < 0.02        | < 0.02              | < 0.02        |
| Chromium Reducible Sulfur <sup>S04</sup>                                       | 0.005 | % S        | < 0.005       | 0.13          | 0.082               | 0.29          |
| Chromium Reducible Sulfur -acidity units                                       | 3     | mol H+/t   | < 3           | 81            | 51                  | 180           |
| Sulfur - KCI Extractable   | 0.02  | % S        | < 0.02        | 0.05          | < 0.02              | 0.02          |
| HCI Extractable Sulfur   | 0.02  | % S        | n/a           | n/a           | n/a                 | n/a           |
| Net Acid soluble sulfur  | 0.02  | % S        | n/a           | n/a           | n/a                 | n/a           |
| Net Acid soluble sulfur - acidity units  | 10    | mol H+/t   | n/a           | n/a           | n/a                 | n/a           |
| Net Acid soluble sulfur - equivalent S% pyrite <sup>S02</sup>                  | 0.02  | % S        | n/a           | n/a           | n/a                 | n/a           |
| Acid Neutralising Capacity (ANCbt)   | 0.01  | %CaCO3     | n/a           | 1.8           | 0.98                | 3.3           |
| Acid Neutralising Capacity - acidity (a-ANCbt)                                 | 2     | mol H+/t   | n/a           | 350           | 200                 | 650           |
| Acid Neutralising Capacity - equivalent S% pyrite (s-<br>ANCbt) <sup>S03</sup> | 0.02  | % S        | n/a           | 0.56          | 0.31                | 1.0           |
| ANC Fineness Factor  |       | factor     | 1.5           | 1.5           | 1.5                 | 1.5           |
| CRS Suite - Net Acidity (Sulfur Units)   | 0.02  | % S        | < 0.02        | < 0.02        | < 0.02              | < 0.02        |
| CRS Suite - Net Acidity (Acidity Units)  | 10    | mol H+/t   | < 10          | < 10          | < 10                | < 10          |
| CRS Suite - Liming Rate <sup>S01</sup>   | 1     | kg CaCO3/t | < 1           | < 1           | < 1                 | < 1           |
| Extraneous Material  |       | _          |               |               |                     |               |
| <2mm Fraction  | 0.005 | g          | 56            | 71            | 63                  | 70            |
| >2mm Fraction  | 0.005 | g          | < 0.005       | < 0.005       | 2.3                 | 0.79          |
| Analysed Material  | 0.1   | %          | 100           | 100           | 97                  | 99            |
| Extraneous Material  | 0.1   | %          | < 0.1         | < 0.1         | 3.4                 | 1.1           |
|  |       |            |               |               |                     |               |
| % Moisture   | 1     | %          | 17            | 24            | 17                  | 22            |

| Client Sample ID                         |      |            | BH03_10.0-<br>10.45 |
|--|------|------------|---------------------|
| Sample Matrix                            |      |            | Soil                |
| Eurofins   mgt Sample No.                |      |            | B18-No41460         |
| Date Sampled                             |      |            | Nov 17, 2018        |
| Test/Reference                           | LOR  | Unit       |                     |
| SPOCAS Suite                             |      |            |                     |
| pH-KCL                                   | 0.1  | pH Units   | 8.2                 |
| pH-OX                                    | 0.1  | pH Units   | 2.6                 |
| Acid trail - Titratable Actual Acidity   | 2    | mol H+/t   | < 2                 |
| Acid trail - Titratable Peroxide Acidity | 2    | mol H+/t   | 210                 |
| Acid trail - Titratable Sulfidic Acidity | 2    | mol H+/t   | 210                 |
| sulfidic - TAA equiv. S% pyrite          | 0.02 | % pyrite S | < 0.02              |
| sulfidic - TPA equiv. S% pyrite          | 0.02 | % pyrite S | 0.34                |
| sulfidic - TSA equiv. S% pyrite          | 0.02 | % pyrite S | 0.34                |
| Sulfur - KCI Extractable                 | 0.02 | % S        | < 0.02              |
| Sulfur - Peroxide                        | 0.02 | % S        | 0.48                |
| Sulfur - Peroxide Oxidisable Sulfur      | 0.02 | % S        | 0.48                |
| acidity - Peroxide Oxidisable Sulfur     | 10   | mol H+/t   | 300                 |
| HCI Extractable Sulfur                   | 0.02 | % S        | n/a                 |
| Net Acid soluble sulfur                  | 0.02 | % S        | n/a                 |
| Net Acid soluble sulfur - acidity units  | 10   | mol H+/t   | n/a                 |



| Client Sample ID   |       |            | BH03_10.0-<br>10.45 |
|--|-------|------------|---------------------|
| Sample Matrix  |       |            | Soil                |
| Eurofins   mgt Sample No.  |       |            | B18-No41460         |
| Date Sampled   |       |            | Nov 17, 2018        |
| Test/Reference   | LOR   | Unit       |                     |
| SPOCAS Suite   |       |            |                     |
| Net Acid soluble sulfur - equivalent S% pyrite <sup>S02</sup>                  | 0.02  | % S        | n/a                 |
| Calcium - KCI Extractable  | 0.02  | % Ca       | 0.07                |
| Calcium - Peroxide   | 0.02  | % Ca       | 0.10                |
| Acid Reacted Calcium   | 0.02  | % Ca       | 0.02                |
| acidity - Acid Reacted Calcium   | 10    | mol H+/t   | 12                  |
| sulfidic - Acid Reacted Ca equiv. S% pyrite                                    | 0.02  | % S        | 0.02                |
| Magnesium - KCI Extractable  | 0.02  | % Mg       | 0.03                |
| Magnesium - Peroxide   | 0.02  | % Mg       | 0.08                |
| Acid Reacted Magnesium   | 0.02  | % Mg       | 0.05                |
| acidity - Acid Reacted Magnesium   | 10    | mol H+/t   | 40                  |
| sulfidic - Acid Reacted Mg equiv. S% pyrite                                    | 0.02  | % S        | 0.06                |
| Acid Neutralising Capacity (ANCE)  | 0.02  | %CaCO3     | n/a                 |
| Acid Neutralising Capacity - Acidity units (a-ANCE)                            | 10    | mol H+/t   | n/a                 |
| Acid Neutralising Capacity - equivalent S% pyrite(s-<br>ANCE)                  | 0.02  | % S        | n/a                 |
| ANC Fineness Factor  |       | factor     | 1.5                 |
| SPOCAS - Net Acidity (Sulfur Units)  | 0.02  | % S        | 0.39                |
| SPOCAS - Net Acidity (Acidity Units)   | 10    | mol H+/t   | 240                 |
| SPOCAS - Liming rate   | 1     | kg CaCO3/t | 18                  |
| Chromium Suite   |       |            |                     |
| pH-KCL   | 0.1   | pH Units   | 8.2                 |
| Acid trail - Titratable Actual Acidity   | 2     | mol H+/t   | < 2                 |
| sulfidic - TAA equiv. S% pyrite  | 0.02  | % pyrite S | < 0.02              |
| Chromium Reducible Sulfur <sup>S04</sup>                                       | 0.005 | % S        | 0.35                |
| Chromium Reducible Sulfur -acidity units                                       | 3     | mol H+/t   | 220                 |
| Sulfur - KCI Extractable   | 0.02  | % S        | < 0.02              |
| HCI Extractable Sulfur   | 0.02  | % S        | n/a                 |
| Net Acid soluble sulfur  | 0.02  | % S        | n/a                 |
| Net Acid soluble sulfur - acidity units  | 10    | mol H+/t   | n/a                 |
| Net Acid soluble sulfur - equivalent S% pyrite <sup>S02</sup>                  | 0.02  | % S        | n/a                 |
| Acid Neutralising Capacity (ANCbt)   | 0.01  | %CaCO3     | 0.75                |
| Acid Neutralising Capacity - acidity (a-ANCbt)                                 | 2     | mol H+/t   | 150                 |
| Acid Neutralising Capacity - equivalent S% pyrite (s-<br>ANCbt) <sup>S03</sup> | 0.02  | % S        | 0.24                |
| ANC Fineness Factor  |       | factor     | 1.5                 |
| CRS Suite - Net Acidity (Sulfur Units)   | 0.02  | % S        | 0.19                |
| CRS Suite - Net Acidity (Acidity Units)  | 10    | mol H+/t   | 120                 |
| CRS Suite - Liming Rate <sup>S01</sup>   | 1     | kg CaCO3/t | 8.8                 |
| Extraneous Material  |       |            |                     |
| <2mm Fraction  | 0.005 | g          | 61                  |
| >2mm Fraction  | 0.005 | g          | < 0.005             |
| Analysed Material  | 0.1   | %          | 100                 |
| Extraneous Material  | 0.1   | %          | < 0.1               |
|  | 1     |            |                     |
| % Moisture   | 1     | %          | 19                  |



### Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

| Description                     | Testing Site | Extracted    | Holding Time |
|---------------------------------|--------------|--------------|--------------|
| SPOCAS Suite                    |              |              |              |
| SPOCAS Suite                    | Brisbane     | Dec 05, 2018 | 6 Week       |
| - Method: LTM-GEN-7050          |              |              |              |
| Chromium Reducible Sulfur Suite |              |              |              |
| Chromium Suite                  | Brisbane     | Dec 05, 2018 | 6 Week       |
| - Method: LTM-GEN-7070          |              |              |              |
| Extraneous Material             | Brisbane     | Dec 05, 2018 | 6 Week       |
| - Method: LTM-GEN-7050/7070     |              |              |              |
| % Moisture                      | Brisbane     | Nov 30, 2018 | 14 Day       |
| - Method: LTM-GEN-7080 Moisture |              |              |              |

|                                       | eur                                  | ofins  | mgt  |                   | ABN– 50 005 (<br>e.mail : Enviro<br>web : www.eur | 085 521<br>Sales@<br>ofins.co | eurofins<br>m.au                | .com                           | Melbourne<br>2-5 Kingston Town Close<br>Oakleigh VIC 3166<br>Phone : +61 3 8564 5000<br>NATA # 1261<br>Site # 1254 & 14271 | Sydney<br>Unit F3, Building F<br>16 Mars Road<br>Lane Cove West NSW 2066<br>Phone : +61 2 9900 8400<br>NATA # 1261 Site # 18217 | Brisbane<br>1/21 Smallwood Place<br>Murarrie QLD 4172<br>Phone : +61 7 3902 4600<br>NATA # 1261 Site # 2079 | Perth<br>2/91 Leach Highway<br>Kewdale WA 6105<br>Phone : +61 8 9251 9600<br>4 NATA # 1261<br>Site # 23736 |
|---------------------------------------|--------------------------------------|--|--|-------------------|---|-------------------------------|---------------------------------|--------------------------------|--|---|---|--|
| Compa<br>Addres<br>Project<br>Project | any Name:<br>ss:<br>t Name:<br>t ID: | Cardno (NSV<br>Level 9, 203<br>St Leonards<br>NSW 2065<br>KYEEMAGH<br>80818157 | V/ACT) Pty Lt<br>Pacific Highw<br>INFANTS SC | d<br>ray<br>CHOOL |   |                               | Or<br>Re<br>Ph<br>Fa            | der No<br>port #<br>one:<br>x: | 0.:<br>630561<br>0294967700<br>02 9499 3902  | Eurofir   | Received:<br>Due:<br>Priority:<br>Contact Name:<br>ns   mgt Analytical Ser                                  | Nov 28, 2018 3:45 PM<br>Dec 5, 2018<br>5 Day<br>Ben Withnall<br>vices Manager : Nibha Vaidya               |
|                                       |                                      | Sa   | mple Detail                                  |                   |   | SPOCAS Suite                  | Chromium Reducible Sulfur Suite | Moisture Set                   |  |   |   |  |
| Melbourr                              | ne Laborato                          | ry - NATA Site   | # 1254 & 142                                 | .71               |   |                               |                                 |                                |  |   |   |  |
| Sydney L                              | Laboratory -                         | NATA Site # 1  | 8217   |                   |   |                               |                                 |                                |  |   |   |  |
| Brisbane                              | e Laboratory                         | - NATA Site #  | 20794  |                   |   | X                             | Х                               | X                              |  |   |   |  |
| External                              | Laboratory - N                       | A I A Site # 237   | 30   |                   |   |                               |                                 |                                |  |   |   |  |
| No S                                  | Sample ID                            | Sample Date  | Sampling<br>Time                             | Matrix            | LAB ID  |                               |                                 |                                |  |   |   |  |
| 1 BHC                                 | 02_4.0-4.45                          | Nov 17, 2018   | TIME   | Soil              | B18-No41456                                       | х                             | Х                               | x                              |  |   |   |  |
| 2 BHC                                 | 02_7.0-7.45                          | Nov 17, 2018   |  | Soil              | B18-No41457                                       | Х                             | Х                               | Х                              |  |   |   |  |
| 3 BH0<br>11.9                         | 02_11.5-<br>95                       | Nov 17, 2018   |  | Soil              | B18-No41458                                       | х                             | х                               | х                              |  |   |   |  |
| 4 BHC                                 | 03_8.5-8.95                          | Nov 17, 2018   |  | Soil              | B18-No41459                                       | Х                             | Х                               | х                              |  |   |   |  |
| 5 BH0<br>10.4                         | 03_10.0-<br>45                       | Nov 17, 2018   |  | Soil              | B18-No41460                                       | х                             | х                               | х                              |  |   |   |  |
| Test Cou                              | unts                                 |  |  |                   |   | 5                             | 5                               | 5                              |  |   |   |  |



### Internal Quality Control Review and Glossary

### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.

- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- 4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- 6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- 7. Samples were analysed on an 'as received' basis.
- 8. This report replaces any interim results previously issued.

### **Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days. \*\*NOTE: pH duplicates are reported as a range NOT as RPD

#### Units

| mg/kg: milligrams per kilogram           | mg/L: milligrams per litre         | ug/L: micrograms per litre                                       |
|--|------------------------------------|--|
| ppm: Parts per million                   | ppb: Parts per billion             | %: Percentage  |
| org/100mL: Organisms per 100 millilitres | NTU: Nephelometric Turbidity Units | MPN/100mL: Most Probable Number of organisms per 100 millilitres |

#### Terms

| Dry              | Where a moisture has been determined on a solid sample the result is expressed on a dry basis.   |
|------------------|--|
| LOR              | Limit of Reporting.  |
| SPIKE            | Addition of the analyte to the sample and reported as percentage recovery.   |
| RPD              | Relative Percent Difference between two Duplicate pieces of analysis.  |
| LCS              | Laboratory Control Sample - reported as percent recovery.  |
| CRM              | Certified Reference Material - reported as percent recovery.   |
| Method Blank     | In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.     |
| Surr - Surrogate | The addition of a like compound to the analyte target and reported as percentage recovery.   |
| Duplicate        | A second piece of analysis from the same sample and reported in the same units as the result to show comparison.   |
| USEPA            | United States Environmental Protection Agency  |
| APHA             | American Public Health Association   |
| TCLP             | Toxicity Characteristic Leaching Procedure   |
| сос              | Chain of Custody   |
| SRA              | Sample Receipt Advice  |
| QSM              | Quality Systems Manual ver 5.1 US Department of Defense  |
| СР               | Client Parent - QC was performed on samples pertaining to this report  |
| NCP              | Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within. |
| TEQ              | Toxic Equivalency Quotient   |

### **QC** - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

#### **QC Data General Comments**

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike.
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



### **Quality Control Results**

| Test   |               |              | Units      | Result 1 |          |     | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|--|---------------|--------------|------------|----------|----------|-----|----------------------|----------------|--------------------|
| LCS - % Recovery   |               |              |            |          |          |     |                      |                |                    |
| Chromium Suite   |               |              |            |          |          |     |                      |                |                    |
| Chromium Reducible Sulfur                                      |               |              | %          | 99       |          |     | 70-130               | Pass           |                    |
| Acid Neutralising Capacity (ANCbt)                             |               |              | %          | 98       |          |     | 70-130               | Pass           |                    |
| Test   | Lab Sample ID | QA<br>Source | Units      | Result 1 |          |     | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
| Duplicate  |               |              |            |          |          |     |                      |                |                    |
| SPOCAS Suite   |               |              |            | Result 1 | Result 2 | RPD |                      |                |                    |
| pH-KCL   | B18-No41456   | CP           | pH Units   | 5.9      | 5.9      | 1.0 | 30%                  | Pass           |                    |
| pH-OX  | B18-No41456   | CP           | pH Units   | 7.2      | 7.2      | 1.0 | 30%                  | Pass           |                    |
| Acid trail - Titratable Actual Acidity                         | B18-No41456   | CP           | mol H+/t   | < 2      | < 2      | <1  | 30%                  | Pass           |                    |
| Acid trail - Titratable Peroxide<br>Acidity                    | B18-No41456   | СР           | mol H+/t   | < 2      | < 2      | <1  | 30%                  | Pass           |                    |
| Acid trail - Titratable Sulfidic Acidity                       | B18-No41456   | CP           | mol H+/t   | < 2      | < 2      | <1  | 30%                  | Pass           |                    |
| sulfidic - TAA equiv. S% pyrite                                | B18-No41456   | CP           | % pyrite S | < 0.02   | < 0.02   | <1  | 30%                  | Pass           |                    |
| sulfidic - TPA equiv. S% pyrite                                | B18-No41456   | CP           | % pyrite S | < 0.02   | < 0.02   | <1  | 30%                  | Pass           |                    |
| sulfidic - TSA equiv. S% pyrite                                | B18-No41456   | CP           | % pyrite S | < 0.02   | < 0.02   | <1  | 30%                  | Pass           |                    |
| Sulfur - KCI Extractable                                       | B18-No41456   | CP           | % S        | < 0.02   | < 0.02   | <1  | 30%                  | Pass           |                    |
| Sulfur - Peroxide  | B18-No41456   | CP           | % S        | 0.24     | 0.25     | 3.0 | 30%                  | Pass           |                    |
| Sulfur - Peroxide Oxidisable Sulfur                            | B18-No41456   | CP           | % S        | 0.24     | 0.25     | 3.0 | 30%                  | Pass           |                    |
| acidity - Peroxide Oxidisable Sulfur                           | B18-No41456   | CP           | mol H+/t   | 150      | 150      | 3.0 | 30%                  | Pass           |                    |
| Calcium - KCI Extractable                                      | B18-No41456   | CP           | % Ca       | < 0.02   | < 0.02   | <1  | 30%                  | Pass           |                    |
| Calcium - Peroxide   | B18-No41456   | CP           | % Ca       | 0.60     | 0.63     | 5.0 | 30%                  | Pass           |                    |
| Acid Reacted Calcium   | B18-No41456   | CP           | % Ca       | 0.60     | 0.63     | 5.0 | 30%                  | Pass           |                    |
| acidity - Acid Reacted Calcium                                 | B18-No41456   | CP           | mol H+/t   | 300      | 310      | 5.0 | 30%                  | Pass           |                    |
| sulfidic - Acid Reacted Ca equiv.<br>S% pyrite                 | B18-No41456   | СР           | % S        | 0.48     | 0.50     | 5.0 | 30%                  | Pass           |                    |
| Magnesium - KCI Extractable                                    | B18-No41456   | CP           | % Mg       | < 0.02   | < 0.02   | <1  | 30%                  | Pass           |                    |
| Magnesium - Peroxide   | B18-No41456   | CP           | % Mg       | < 0.02   | < 0.02   | <1  | 30%                  | Pass           |                    |
| Acid Reacted Magnesium   | B18-No41456   | CP           | % Mg       | < 0.02   | < 0.02   | <1  | 30%                  | Pass           |                    |
| acidity - Acid Reacted Magnesium                               | B18-No41456   | CP           | mol H+/t   | < 10     | < 10     | <1  | 30%                  | Pass           |                    |
| sulfidic - Acid Reacted Mg equiv.<br>S% pyrite                 | B18-No41456   | СР           | % S        | < 0.02   | < 0.02   | <1  | 30%                  | Pass           |                    |
| Acid Neutralising Capacity (ANCE)                              | B18-No41456   | CP           | %CaCO3     | 0.42     | 0.40     | 4.0 | 30%                  | Pass           |                    |
| Acid Neutralising Capacity - Acidity units (a-ANCE)            | B18-No41456   | СР           | mol H+/t   | 84       | 80       | 4.0 | 30%                  | Pass           |                    |
| ANC Fineness Factor  | B18-No41456   | CP           | factor     | 1.5      | 1.5      | <1  | 30%                  | Pass           |                    |
| SPOCAS - Liming rate   | B18-No41456   | CP           | kg CaCO3/t | 11       | 12       | 3.0 | 30%                  | Pass           |                    |
| Duplicate  |               |              |            |          |          |     | _                    |                |                    |
| Chromium Suite   |               | -            |            | Result 1 | Result 2 | RPD |                      |                |                    |
| Chromium Reducible Sulfur                                      | B18-No41456   | CP           | % S        | < 0.005  | < 0.005  | <1  | 30%                  | Pass           |                    |
| Chromium Reducible Sulfur -acidity units                       | B18-No41456   | СР           | mol H+/t   | < 3      | < 3      | <1  | 30%                  | Pass           |                    |
| Acid Neutralising Capacity (ANCbt)                             | B18-No41456   | CP           | %CaCO3     | n/a      | n/a      | n/a | 30%                  | Pass           |                    |
| Acid Neutralising Capacity -<br>equivalent S% pyrite (s-ANCbt) | B18-No41456   | СР           | % S        | n/a      | n/a      | n/a | 30%                  | Pass           |                    |
| CRS Suite - Net Acidity (Sulfur<br>Units)                      | B18-No41456   | СР           | % S        | < 0.02   | < 0.02   | <1  | 30%                  | Pass           |                    |
| CRS Suite - Net Acidity (Acidity Units)                        | B18-No41456   | СР           | mol H+/t   | < 10     | < 10     | <1  | 30%                  | Pass           |                    |
| CRS Suite - Liming Rate  | B18-No41456   | CP           | kg CaCO3/t | < 1      | < 1      | <1  | 30%                  | Pass           |                    |
| Duplicate  |               |              |            |          |          |     |                      |                |                    |
|  |               |              |            | Result 1 | Result 2 | RPD |                      |                |                    |
| % Moisture   | B18-No15557   | NCP          | %          | < 1      | < 1      | <1  | 30%                  | Pass           |                    |



### Comments

Eurofins | mgt accreditation number 1261, corporate site 1254 is currently in progress of a controlled transition to a new custom built location at 6 Monterey Road, Dandenong South, Victoria 3175. All results on this report denoted as being performed by Eurofins | mgt 2-5 Kingston Town Close, Oakleigh Victoria 3166 corporate site 1254, will have been performed on either Oakleigh or new Dandenong South site.

| Sample Integrity  |     |
|---|-----|
| Custody Seals Intact (if used)  | N/A |
| Attempt to Chill was evident  | Yes |
| Sample correctly preserved  | Yes |
| Appropriate sample containers have been used                            | Yes |
| Sample containers for volatile analysis received with minimal headspace | Yes |
| Samples received within HoldingTime                                     | Yes |
| Some samples have been subcontracted                                    | No  |

### **Qualifier Codes/Comments**

### Code Description

| S01 | Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil' multiply 'reported results' x 'wet bulk density of soil in t/m3' |
|-----|---|
| S02 | Retained Acidity is Reported when the pHKCI is less than pH 4.5   |
| S03 | Acid Neutralising Capacity is only required if the pHKCl if greater than or equal to pH 6.5   |
| S04 | Acid Sulfate Soil Samples have a 24 hour holding time unless frozen or dried within that period   |

### Authorised By

Nibha Vaidya Myles Clark

Analytical Services Manager Senior Analyst-SPOCAS (QLD)

Glenn Jackson General Manager Final report - this Report replaces any previously issued Report

Indicates Not Requested
Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

+ 630661 ъ Comments (If applicable) Samples Received: Cool or Amblent (circle one) Transported by: Hand delivered / courier -Pege femperature Received at: name / company) alinquished by: Date & Time: Signature: Lab use: CHAIN OF CUSTODY AND ANALYSIS REQUEST 181029CAR\_1 Electronic Analysis Required name / company) name / company) Relinquished by: Kyeemagh Infants School Date & Time: eceived by: Date & Time: Signature: Signature: Standard TAT 80818157 i, Project Specific Quote No. : Date results required: × Project Number: × × SPOCAS × × Project Name: Report format: PO No.: Chromium Reducible Sulfur Suite × × × × × Relinguished by: tame / company (name / company Matrix Received by: Date & Tine: Soil Soil Date & Time: 5ignature: Signature: 17/11/2018 17/11/2018 17/11/2018 17/11/2018 Date sampled 17/11/2018 ben.withnall@cardno.com.au\_joel.griffiths@cardno.com.au 3-45PM Cardno Sample ID | Laboratory Sample ID |No. Containers | Preservation Frozen Frozen Frozen Received by: 12 [/ WW Frozen Frozen (name i company) EU-D 20 vidingss: Level 9 - The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065 Date & Time: 30/11 Sample information name / company) **Celinquished by:** Date & Time: -÷ -+ égnature: Signature: Cardno<sup>4</sup> Shaping the Future 12/11/18: 12:00 Ben Withnall Joel Griffiths Jack Griffiths Joel Griffiths 9495 8186 9496 7873 Email Address (results and Invoice): Cardno ę Mernative Contact: elephone Number: alephone Number: BH03\_10.0-10.45 BH02\_11.5-11.95 BH02\_7.0-7.45 BH02\_4.0-4.45 8H03\_8.5-8.95 Contact Person: kame / company} ame / company) slingulshed by: late & Time: Date & Time: tecelved by: Sampler: Ignature: Signature:

Rebutur



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Brishane Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794 Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 NATA # 1261 Site # 23736

ABN - 50 005 085 521

e.mail : EnviroSales@eurofins.com

web : www.eurofins.com.au

Sample Receipt Advice

Company name: Cardno (NSW/ACT) Pty Ltd Contact name: **Ben Withnall KYEEMAGH INFANTS SCHOOL** Project name: Project ID: 80818157 COC number: Not provided Turn around time: 5 Day Nov 28, 2018 3:45 PM Date/Time received: Eurofins | mgt reference: 630561

### Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- $\mathbf{V}$ Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- $\mathbf{V}$ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- $\boxtimes$ Split sample sent to requested external lab.
- $\times$ Some samples have been subcontracted.
- Custody Seals intact (if used). N/A

# Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Ben Withnall - ben.withnall@cardno.com.au.

Note: A copy of these results will also be delivered to the general Cardno (NSW/ACT) Pty Ltd email address.



Environmental Laboratory Air Analysis Water Analysis Soil Contamination Analysis

NATA Accreditation Stack Emission Sampling & Analysis Trade Waste Sampling & Analysis Groundwater Sampling & Analysis

38 Years of Environmental Analysis & Experience



Cardno (NSW/ACT) Pty Ltd Level 9, 203 Pacific Highway St Leonards NSW 2065





NATA Accredited Accreditation Number 1261 Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

### Attention:

Ben Withnall

Report Project name Project ID Received Date 629911-S KYEEMAGH INFANTS SCHOOL 80818157 Nov 23, 2018

| Client Sample ID  |      |            | BH01 1.0-1.45 | BH01 8.5-8.95 | BH01_10.0-<br>10.45 | BH01_16.0-<br>16.45 |
|---|------|------------|---------------|---------------|---------------------|---------------------|
| Sample Matrix   |      |            | Soil          | Soil          | Soil                | Soil                |
| Eurofins   mgt Sample No.                                     |      |            | B18-No36075   | B18-No36076   | B18-No36077         | B18-No36078         |
| Date Sampled  |      |            | Not Provided  | Not Provided  | Not Provided        | Not Provided        |
| Test/Reference  | LOR  | Unit       |               |               |                     |                     |
| SPOCAS Suite  |      | Cint       |               |               |                     |                     |
| pH-KCL  | 0.1  | pH Units   | 5.8           | 9.0           | 9.2                 | 5.5                 |
| pH-OX   | 0.1  | pH Units   | 4.8           | 7.3           | 7.0                 | 4.4                 |
| Acid trail - Titratable Actual Acidity                        | 2    | mol H+/t   | 3.0           | < 2           | < 2                 | 7.0                 |
| Acid trail - Titratable Peroxide Acidity                      | 2    | mol H+/t   | < 2           | < 2           | < 2                 | 47                  |
| Acid trail - Titratable Sulfidic Acidity                      | 2    | mol H+/t   | < 2           | < 2           | < 2                 | 40                  |
| sulfidic - TAA equiv. S% pyrite                               | 0.02 | % pyrite S | < 0.02        | < 0.02        | < 0.02              | < 0.02              |
| sulfidic - TPA equiv. S% pyrite                               | 0.02 | % pyrite S | < 0.02        | < 0.02        | < 0.02              | 0.08                |
| sulfidic - TSA equiv. S% pyrite                               | 0.02 | % pyrite S | < 0.02        | < 0.02        | < 0.02              | 0.06                |
| Sulfur - KCI Extractable                                      | 0.02 | % S        | < 0.02        | 0.05          | 0.04                | < 0.02              |
| Sulfur - Peroxide   | 0.02 | % S        | < 0.02        | 0.45          | 0.19                | 0.06                |
| Sulfur - Peroxide Oxidisable Sulfur                           | 0.02 | % S        | < 0.02        | 0.40          | 0.15                | 0.07                |
| acidity - Peroxide Oxidisable Sulfur                          | 10   | mol H+/t   | < 10          | 250           | 95                  | 40                  |
| HCI Extractable Sulfur  | 0.02 | % S        | n/a           | n/a           | n/a                 | n/a                 |
| Net Acid soluble sulfur                                       | 0.02 | % S        | n/a           | n/a           | n/a                 | n/a                 |
| Net Acid soluble sulfur - acidity units                       | 10   | mol H+/t   | n/a           | n/a           | n/a                 | n/a                 |
| Net Acid soluble sulfur - equivalent S% pyrite <sup>S02</sup> | 0.02 | % S        | n/a           | n/a           | n/a                 | n/a                 |
| Calcium - KCI Extractable                                     | 0.02 | % Ca       | < 0.02        | 0.20          | 0.13                | 0.03                |
| Calcium - Peroxide  | 0.02 | % Ca       | < 0.02        | 0.70          | 0.29                | 0.03                |
| Acid Reacted Calcium  | 0.02 | % Ca       | < 0.02        | 0.50          | 0.16                | < 0.02              |
| acidity - Acid Reacted Calcium                                | 10   | mol H+/t   | < 10          | 250           | 80                  | < 10                |
| sulfidic - Acid Reacted Ca equiv. S% pyrite                   | 0.02 | % S        | < 0.02        | 0.40          | 0.13                | < 0.02              |
| Magnesium - KCI Extractable                                   | 0.02 | % Mg       | < 0.02        | 0.05          | 0.02                | 0.03                |
| Magnesium - Peroxide  | 0.02 | % Mg       | < 0.02        | 0.12          | 0.06                | 0.04                |
| Acid Reacted Magnesium  | 0.02 | % Mg       | < 0.02        | 0.07          | 0.04                | < 0.02              |
| acidity - Acid Reacted Magnesium                              | 10   | mol H+/t   | < 10          | 56            | 33                  | < 10                |
| sulfidic - Acid Reacted Mg equiv. S% pyrite                   | 0.02 | % S        | < 0.02        | 0.09          | 0.05                | < 0.02              |
| Acid Neutralising Capacity (ANCE)                             | 0.02 | %CaCO3     | n/a           | 0.90          | 0.28                | n/a                 |
| Acid Neutralising Capacity - Acidity units (a-ANCE)           | 10   | mol H+/t   | n/a           | 180           | 55                  | n/a                 |
| Acid Neutralising Capacity - equivalent S% pyrite(s-<br>ANCE) | 0.02 | % S        | n/a           | 0.29          | 0.09                | n/a                 |
| ANC Fineness Factor   |      | factor     | 1.5           | 1.5           | 1.5                 | 1.5                 |
| SPOCAS - Net Acidity (Sulfur Units)                           | 0.02 | % S        | < 0.02        | < 0.02        | < 0.02              | 0.08                |
| SPOCAS - Net Acidity (Acidity Units)                          | 10   | mol H+/t   | < 10          | < 10          | < 10                | 48                  |
| SPOCAS - Liming rate  | 1    | kg CaCO3/t | < 1           | < 1           | < 1                 | 4.0                 |



| Client Sample ID   |       |            | BH01_1.0-1.45 | BH01_8.5-8.95 | BH01_10.0-<br>10.45 | BH01_16.0-<br>16.45 |
|--|-------|------------|---------------|---------------|---------------------|---------------------|
| Sample Matrix  |       |            | Soil          | Soil          | Soil                | Soil                |
| Eurofins   mgt Sample No.  |       |            | B18-No36075   | B18-No36076   | B18-No36077         | B18-No36078         |
| Date Sampled   |       |            | Not Provided  | Not Provided  | Not Provided        | Not Provided        |
| Test/Reference   | LOR   | Unit       |               |               |                     |                     |
| Chromium Suite   |       |            |               |               |                     |                     |
| pH-KCL   | 0.1   | pH Units   | 5.8           | 9.0           | 9.2                 | 5.5                 |
| Acid trail - Titratable Actual Acidity   | 2     | mol H+/t   | 3.0           | < 2           | < 2                 | 7.0                 |
| sulfidic - TAA equiv. S% pyrite  | 0.02  | % pyrite S | < 0.02        | < 0.02        | < 0.02              | < 0.02              |
| Chromium Reducible Sulfur <sup>S04</sup>                                       | 0.005 | % S        | < 0.005       | 0.34          | 0.16                | 0.050               |
| Chromium Reducible Sulfur -acidity units                                       | 3     | mol H+/t   | < 3           | 210           | 97                  | 31                  |
| Sulfur - KCI Extractable   | 0.02  | % S        | < 0.02        | 0.05          | 0.04                | < 0.02              |
| HCI Extractable Sulfur   | 0.02  | % S        | n/a           | n/a           | n/a                 | n/a                 |
| Net Acid soluble sulfur  | 0.02  | % S        | n/a           | n/a           | n/a                 | n/a                 |
| Net Acid soluble sulfur - acidity units  | 10    | mol H+/t   | n/a           | n/a           | n/a                 | n/a                 |
| Net Acid soluble sulfur - equivalent S% pyrite <sup>S02</sup>                  | 0.02  | % S        | n/a           | n/a           | n/a                 | n/a                 |
| Acid Neutralising Capacity (ANCbt)   | 0.01  | %CaCO3     | n/a           | 2.5           | 1.2                 | n/a                 |
| Acid Neutralising Capacity - acidity (a-ANCbt)                                 | 2     | mol H+/t   | n/a           | 500           | 250                 | n/a                 |
| Acid Neutralising Capacity - equivalent S% pyrite (s-<br>ANCbt) <sup>S03</sup> | 0.02  | % S        | n/a           | 0.81          | 0.40                | n/a                 |
| ANC Fineness Factor  |       | factor     | 1.5           | 1.5           | 1.5                 | 1.5                 |
| CRS Suite - Net Acidity (Sulfur Units)   | 0.02  | % S        | < 0.02        | < 0.02        | < 0.02              | 0.06                |
| CRS Suite - Net Acidity (Acidity Units)  | 10    | mol H+/t   | < 10          | < 10          | < 10                | 38                  |
| CRS Suite - Liming Rate <sup>S01</sup>   | 1     | kg CaCO3/t | < 1           | < 1           | < 1                 | 2.9                 |
| Extraneous Material  |       |            |               |               |                     |                     |
| <2mm Fraction  | 0.005 | g          | 42            | 49            | 39                  | 40                  |
| >2mm Fraction  | 0.005 | g          | < 0.005       | 0.10          | 1.4                 | < 0.005             |
| Analysed Material  | 0.1   | %          | 100           | 100           | 96                  | 100                 |
| Extraneous Material  | 0.1   | %          | < 0.1         | 0.2           | 3.5                 | < 0.1               |
|  |       |            |               |               |                     |                     |
| % Moisture   | 1     | %          | 3.9           | 23            | 20                  | 15                  |

| Client Sample ID  |      |            | BH04_0.5-0.95 | BH04_2.0-2.45 | BH05_1.5-1.95 |
|---|------|------------|---------------|---------------|---------------|
| Sample Matrix   |      |            | Soil          | Soil          | Soil          |
| Eurofins   mgt Sample No.                                     |      |            | B18-No36079   | B18-No36080   | B18-No36081   |
| Date Sampled  |      |            | Not Provided  | Not Provided  | Not Provided  |
| Test/Reference  | LOR  | Unit       |               |               |               |
| SPOCAS Suite  |      |            |               |               |               |
| pH-KCL  | 0.1  | pH Units   | 6.7           | 5.7           | 5.7           |
| pH-OX   | 0.1  | pH Units   | 4.9           | 4.4           | 4.9           |
| Acid trail - Titratable Actual Acidity                        | 2    | mol H+/t   | < 2           | 3.0           | 3.0           |
| Acid trail - Titratable Peroxide Acidity                      | 2    | mol H+/t   | < 2           | < 2           | < 2           |
| Acid trail - Titratable Sulfidic Acidity                      | 2    | mol H+/t   | < 2           | < 2           | < 2           |
| sulfidic - TAA equiv. S% pyrite                               | 0.02 | % pyrite S | < 0.02        | < 0.02        | < 0.02        |
| sulfidic - TPA equiv. S% pyrite                               | 0.02 | % pyrite S | < 0.02        | < 0.02        | < 0.02        |
| sulfidic - TSA equiv. S% pyrite                               | 0.02 | % pyrite S | < 0.02        | < 0.02        | < 0.02        |
| Sulfur - KCI Extractable                                      | 0.02 | % S        | < 0.02        | < 0.02        | < 0.02        |
| Sulfur - Peroxide   | 0.02 | % S        | < 0.02        | < 0.02        | < 0.02        |
| Sulfur - Peroxide Oxidisable Sulfur                           | 0.02 | % S        | < 0.02        | < 0.02        | < 0.02        |
| acidity - Peroxide Oxidisable Sulfur                          | 10   | mol H+/t   | < 10          | < 10          | < 10          |
| HCI Extractable Sulfur  | 0.02 | % S        | n/a           | n/a           | n/a           |
| Net Acid soluble sulfur                                       | 0.02 | % S        | n/a           | n/a           | n/a           |
| Net Acid soluble sulfur - acidity units                       | 10   | mol H+/t   | n/a           | n/a           | n/a           |
| Net Acid soluble sulfur - equivalent S% pyrite <sup>S02</sup> | 0.02 | % S        | n/a           | n/a           | n/a           |



| Client Sample ID<br>Sample Matrix  |       |            | BH04_0.5-0.95 | BH04_2.0-2.45 | BH05_1.5-1.95 |
|--|-------|------------|---------------|---------------|---------------|
|  |       |            | B18 No26070   | D18 No26080   | B19 No26094   |
|  |       |            | B10-N030079   | B10-N030000   | B10-N030001   |
| Date Sampled   |       |            | Not Provided  | Not Provided  | Not Provided  |
| Test/Reference   | LOR   | Unit       |               |               |               |
| SPOCAS Suite   |       |            |               |               |               |
| Calcium - KCI Extractable  | 0.02  | % Ca       | < 0.02        | < 0.02        | < 0.02        |
| Calcium - Peroxide   | 0.02  | % Ca       | < 0.02        | < 0.02        | < 0.02        |
| Acid Reacted Calcium   | 0.02  | % Ca       | < 0.02        | < 0.02        | < 0.02        |
| acidity - Acid Reacted Calcium   | 10    | mol H+/t   | < 10          | < 10          | < 10          |
| sulfidic - Acid Reacted Ca equiv. S% pyrite                                    | 0.02  | % S        | < 0.02        | < 0.02        | < 0.02        |
| Magnesium - KCI Extractable  | 0.02  | % Mg       | < 0.02        | < 0.02        | < 0.02        |
| Magnesium - Peroxide   | 0.02  | % Mg       | < 0.02        | < 0.02        | < 0.02        |
| Acid Reacted Magnesium   | 0.02  | % Mg       | < 0.02        | < 0.02        | < 0.02        |
| acidity - Acid Reacted Magnesium   | 10    | mol H+/t   | < 10          | < 10          | < 10          |
| sulfidic - Acid Reacted Mg equiv. S% pyrite                                    | 0.02  | % S        | < 0.02        | < 0.02        | < 0.02        |
| Acid Neutralising Capacity (ANCE)  | 0.02  | %CaCO3     | n/a           | n/a           | n/a           |
| Acid Neutralising Capacity - Acidity units (a-ANCE)                            | 10    | mol H+/t   | n/a           | n/a           | n/a           |
| Acid Neutralising Capacity - equivalent S% pyrite(s-                           | 0.02  | % S        | n/a           | n/a           | n/a           |
| ANC Fineness Factor  | 0.02  | factor     | 1.5           | 1.5           | 1.5           |
| SPOCAS - Net Acidity (Sulfur Units)  | 0.02  | % S        | < 0.02        | < 0.02        | < 0.02        |
| SPOCAS - Net Acidity (Acidity Units)   | 10    | mol H+/t   | < 10          | < 10          | < 10          |
| SPOCAS - Liming rate   | 1     | kg CaCO3/t | < 1           | < 1           | < 1           |
| Chromium Suite   |       | 5          |               |               |               |
| pH-KCL   | 0.1   | pH Units   | 6.7           | 5.7           | 5.7           |
| Acid trail - Titratable Actual Acidity   | 2     | mol H+/t   | < 2           | 3.0           | 3.0           |
| sulfidic - TAA equiv. S% pyrite  | 0.02  | % pyrite S | < 0.02        | < 0.02        | < 0.02        |
| Chromium Reducible Sulfur <sup>S04</sup>                                       | 0.005 | % S        | < 0.005       | < 0.005       | < 0.005       |
| Chromium Reducible Sulfur -acidity units                                       | 3     | mol H+/t   | < 3           | < 3           | < 3           |
| Sulfur - KCI Extractable   | 0.02  | % S        | < 0.02        | < 0.02        | < 0.02        |
| HCI Extractable Sulfur   | 0.02  | % S        | n/a           | n/a           | n/a           |
| Net Acid soluble sulfur  | 0.02  | % S        | n/a           | n/a           | n/a           |
| Net Acid soluble sulfur - acidity units  | 10    | mol H+/t   | n/a           | n/a           | n/a           |
| Net Acid soluble sulfur - equivalent S% pyrite <sup>S02</sup>                  | 0.02  | % S        | n/a           | n/a           | n/a           |
| Acid Neutralising Capacity (ANCbt)   | 0.01  | %CaCO3     | 0.28          | n/a           | n/a           |
| Acid Neutralising Capacity - acidity (a-ANCbt)                                 | 2     | mol H+/t   | 56            | n/a           | n/a           |
| Acid Neutralising Capacity - equivalent S% pyrite (s-<br>ANCbt) <sup>S03</sup> | 0.02  | % S        | 0.09          | n/a           | n/a           |
| ANC Fineness Factor  |       | factor     | 1.5           | 1.5           | 1.5           |
| CRS Suite - Net Acidity (Sulfur Units)   | 0.02  | % S        | < 0.02        | < 0.02        | < 0.02        |
| CRS Suite - Net Acidity (Acidity Units)  | 10    | mol H+/t   | < 10          | < 10          | < 10          |
| CRS Suite - Liming Rate <sup>S01</sup>   | 1     | kg CaCO3/t | < 1           | < 1           | < 1           |
| Extraneous Material  |       |            |               |               |               |
| <2mm Fraction  | 0.005 | g          | 41            | 51            | 46            |
| >2mm Fraction  | 0.005 | g          | 11            | < 0.005       | < 0.005       |
| Analysed Material  | 0.1   | %          | 78            | 100           | 100           |
| Extraneous Material  | 0.1   | %          | 22            | < 0.1         | < 0.1         |
|  |       |            |               |               |               |
| % Moisture   | 1     | %          | < 1           | < 1           | 3.0           |



### Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

| Description                     | Testing Site | Extracted    | Holding Time |
|---------------------------------|--------------|--------------|--------------|
| SPOCAS Suite                    |              |              |              |
| SPOCAS Suite                    | Brisbane     | Nov 28, 2018 | 6 Week       |
| - Method: LTM-GEN-7050          |              |              |              |
| Chromium Reducible Sulfur Suite |              |              |              |
| Chromium Suite                  | Brisbane     | Nov 28, 2018 | 6 Week       |
| - Method: LTM-GEN-7070          |              |              |              |
| Extraneous Material             | Brisbane     | Nov 28, 2018 | 6 Week       |
| - Method: LTM-GEN-7050/7070     |              |              |              |
| % Moisture                      | Brisbane     | Nov 27, 2018 | 14 Day       |
| - Method: LTM-GEN-7080 Moisture |              |              |              |

|            | 🔅 eur                       | ofins  | mgt                            |           | ABN– 50 005 (<br>e.mail : Enviro<br>web : www.eu | 085 521<br>Sales@<br>rofins.co | eurofins<br>om.au               | .com                           | Melbourne<br>2-5 Kingston Town Close<br>Oakleigh VIC 3166<br>Phone : +61 3 8564 5000<br>NATA # 1261<br>Site # 1254 & 14271 | Sydney<br>Unit F3, Building F<br>16 Mars Road<br>Lane Cove West NSW 2066<br>Phone : +61 2 9900 8400<br>NATA # 1261 Site # 18217 | Brisbane<br>1/21 Smallwood Place<br>Murarrie QLD 4172<br>Phone : +61 7 3902 4600<br>NATA # 1261 Site # 2079 | Perth<br>2/91 Leach Highway<br>Kewdale WA 6105<br>Phone : +61 8 9251 9600<br>4 NATA # 1261<br>Site # 23736 |
|------------|-----------------------------|--|--------------------------------|-----------|--|--------------------------------|---------------------------------|--------------------------------|--|---|---|--|
| Co<br>Ad   | mpany Name:<br>dress:       | Cardno (NSV<br>Level 9, 203<br>St Leonards<br>NSW 2065 | V/ACT) Pty Lt<br>Pacific Highw | id<br>/ay |  |                                | Or<br>Re<br>Ph<br>Fa            | der No<br>port #<br>one:<br>x: | .:<br>629911<br>0294967700<br>02 9499 3902   |   | Received:<br>Due:<br>Priority:<br>Contact Name:   | Nov 23, 2018 12:00 PM<br>Nov 30, 2018<br>5 Day<br>Ben Withnall   |
| Pro<br>Pro | oject Name:<br>oject ID:    | KYEEMAGH<br>80818157                                   | INFANTS SC                     | CHOOL     |  |                                |                                 |                                |  | Eurofii   | ns   mgt Analytical Ser   | vices Manager : Nibha Vaidya   |
|            | Sample Detail               |  |                                |           |  | SPOCAS Suite                   | Chromium Reducible Sulfur Suite | Moisture Set                   |  |   |   |  |
| Melb       | ourne Laborato              | ory - NATA Site  | # 1254 & 142                   | 271       |  |                                |                                 |                                |  |   |   |  |
| Sydr       | ey Laboratory               | - NATA Site # 1  | 8217                           |           |  |                                |                                 |                                |  |   |   |  |
| Brisk      | ane Laborator               | y - NATA Site #  | 20794                          |           |  | Х                              | х                               | х                              |  |   |   |  |
| Perth      | Laboratory - N              | ATA Site # 237   | 36                             |           |  |                                |                                 |                                |  |   |   |  |
| Exte<br>No | nal Laboratory<br>Sample ID | Sample Date  | Sampling<br>Time               | Matrix    | LAB ID   |                                |                                 |                                |  |   |   |  |
| 1          | BH01_1.0-1.45               | Not Provided   |                                | Soil      | B18-No36075                                      | х                              | х                               | х                              |  |   |   |  |
| 2          | BH01_8.5-8.95               | Not Provided   |                                | Soil      | B18-No36076                                      | Х                              | х                               | Х                              |  |   |   |  |
| 3          | BH01_10.0-<br>10.45         | Not Provided   |                                | Soil      | B18-No36077                                      | х                              | х                               | x                              |  |   |   |  |
| 4          | BH01_16.0-<br>16.45         | Not Provided   |                                | Soil      | B18-No36078                                      | х                              | x                               | х                              |  |   |   |  |
| 5          | BH04_0.5-0.95               | Not Provided   |                                | Soil      | B18-No36079                                      | Х                              | х                               | Х                              |  |   |   |  |
| 6          | BH04_2.0-2.45               | Not Provided   |                                | Soil      | B18-No36080                                      | х                              | х                               | Х                              |  |   |   |  |
| 7          | BH05_1.5-1.95               | Not Provided   |                                | Soil      | B18-No36081                                      | Х                              | х                               | Х                              |  |   |   |  |
| Test       | Counts                      |  |                                |           |  | 7                              | 7                               | 7                              |  |   |   |  |



### Internal Quality Control Review and Glossary

### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.

- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- 4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- 6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- 7. Samples were analysed on an 'as received' basis.
- 8. This report replaces any interim results previously issued.

### **Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days. \*\*NOTE: pH duplicates are reported as a range NOT as RPD

#### Units

| mg/kg: milligrams per kilogram           | mg/L: milligrams per litre         | ug/L: micrograms per litre                                       |
|--|------------------------------------|--|
| ppm: Parts per million                   | ppb: Parts per billion             | %: Percentage  |
| org/100mL: Organisms per 100 millilitres | NTU: Nephelometric Turbidity Units | MPN/100mL: Most Probable Number of organisms per 100 millilitres |

### Terms

| Dry              | Where a moisture has been determined on a solid sample the result is expressed on a dry basis.   |
|------------------|--|
| LOR              | Limit of Reporting.  |
| SPIKE            | Addition of the analyte to the sample and reported as percentage recovery.   |
| RPD              | Relative Percent Difference between two Duplicate pieces of analysis.  |
| LCS              | Laboratory Control Sample - reported as percent recovery.  |
| CRM              | Certified Reference Material - reported as percent recovery.   |
| Method Blank     | In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.     |
| Surr - Surrogate | The addition of a like compound to the analyte target and reported as percentage recovery.   |
| Duplicate        | A second piece of analysis from the same sample and reported in the same units as the result to show comparison.   |
| USEPA            | United States Environmental Protection Agency  |
| APHA             | American Public Health Association   |
| TCLP             | Toxicity Characteristic Leaching Procedure   |
| coc              | Chain of Custody   |
| SRA              | Sample Receipt Advice  |
| QSM              | Quality Systems Manual ver 5.1 US Department of Defense  |
| СР               | Client Parent - QC was performed on samples pertaining to this report  |
| NCP              | Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within. |
| TEQ              | Toxic Equivalency Quotient   |

### **QC** - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

### **QC Data General Comments**

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike.
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



### **Quality Control Results**

| Test  | Lab Sample ID | b Sample ID QA<br>Source |             | Result 1 |          |            | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|---|---------------|--------------------------|-------------|----------|----------|------------|----------------------|----------------|--------------------|
| Duplicate   |               |                          |             |          |          |            |                      |                |                    |
| SPOCAS Suite  |               | -                        |             | Result 1 | Result 2 | RPD        |                      |                |                    |
| pH-KCL  | B18-No36075   | CP                       | pH Units    | 5.8      | 5.8      | <1         | 30%                  | Pass           |                    |
| pH-OX   | B18-No36075   | CP                       | pH Units    | 4.8      | 4.8      | 1.5        | 30%                  | Pass           |                    |
| Acid trail - Titratable Actual Acidity                            | B18-No36075   | CP                       | mol H+/t    | 3.0      | 3.0      | 1.6        | 30%                  | Pass           |                    |
| Acid trail - Titratable Peroxide<br>Acidity                       | B18-No36075   | СР                       | mol H+/t    | < 2      | < 2      | <1         | 30%                  | Pass           |                    |
| Acid trail - Titratable Sulfidic Acidity                          | B18-No36075   | CP                       | mol H+/t    | < 2      | < 2      | <1         | 30%                  | Pass           |                    |
| sulfidic - TAA equiv. S% pyrite                                   | B18-No36075   | CP                       | % pyrite S  | < 0.02   | < 0.02   | <1         | 30%                  | Pass           |                    |
| sulfidic - TPA equiv. S% pyrite                                   | B18-No36075   | CP                       | % pyrite S  | < 0.02   | < 0.02   | <1         | 30%                  | Pass           |                    |
| sulfidic - TSA equiv. S% pyrite                                   | B18-No36075   | CP                       | % pyrite S  | < 0.02   | < 0.02   | <1         | 30%                  | Pass           |                    |
| Sulfur - KCI Extractable  | B18-No36075   | CP                       | % S         | < 0.02   | < 0.02   | <1         | 30%                  | Pass           |                    |
| Sulfur - Peroxide   | B18-No36075   | CP                       | % S         | < 0.02   | < 0.02   | <1         | 30%                  | Pass           |                    |
| Sulfur - Peroxide Oxidisable Sulfur                               | B18-No36075   | CP                       | % S         | < 0.02   | < 0.02   | <1         | 30%                  | Pass           |                    |
| acidity - Peroxide Oxidisable Sulfur                              | B18-No36075   | CP                       | mol H+/t    | < 10     | < 10     | <1         | 30%                  | Pass           |                    |
| HCI Extractable Sulfur  | B18-No36075   | CP                       | % S         | n/a      | n/a      | n/a        | 30%                  | Pass           |                    |
| Net Acid soluble sulfur   | B18-No36075   | CP                       | % S         | n/a      | n/a      | n/a        | 30%                  | Pass           |                    |
| Net Acid soluble sulfur - acidity units                           | B18-No36075   | СР                       | mol H+/t    | n/a      | n/a      | n/a        | 30%                  | Pass           |                    |
| Net Acid soluble sulfur - equivalent                              | B18 No26075   | CP                       | 0/ S        | n/2      | n/a      | n/2        | 30%                  | Page           |                    |
| Calcium KCI Extractable   | B18 No26075   |                          | %C2         | 11/a     | 11/a     | -1         | 30%                  | Pass           |                    |
| Calcium Perovido  | B10-N030075   |                          | % Ca        | < 0.02   | < 0.02   | <1         | 30%                  | Pass           |                    |
| Acid Reacted Coloium  | B10-N030075   |                          | % Ca        | < 0.02   | < 0.02   | <1         | 30%                  | Pass           |                    |
| Acid Reacted Calcium  | B10-N030075   |                          |             | < 0.02   | < 0.02   | <1         | 30%                  | Pass           |                    |
| sulfidic Acid Reacted Calcium                                     | B10-11030073  | UF                       |             | < 10     | × 10     | ~1         | 30 %                 | газэ           |                    |
| S% pyrite   | B18-No36075   | СР                       | % S         | < 0.02   | < 0.02   | <1         | 30%                  | Pass           |                    |
| Magnesium - KCI Extractable                                       | B18-No36075   | CP                       | % Mg        | < 0.02   | < 0.02   | <1         | 30%                  | Pass           |                    |
| Magnesium - Peroxide  | B18-No36075   | CP                       | % Mg        | < 0.02   | < 0.02   | <1         | 30%                  | Pass           |                    |
| Acid Reacted Magnesium  | B18-No36075   | CP                       | % Mg        | < 0.02   | < 0.02   | <1         | 30%                  | Pass           |                    |
| acidity - Acid Reacted Magnesium                                  | B18-No36075   | CP                       | mol H+/t    | < 10     | < 10     | <1         | 30%                  | Pass           |                    |
| sulfidic - Acid Reacted Mg equiv.<br>S% pyrite                    | B18-No36075   | СР                       | % S         | < 0.02   | < 0.02   | <1         | 30%                  | Pass           |                    |
| Acid Neutralising Capacity (ANCE)                                 | B18-No36075   | CP                       | %CaCO3      | n/a      | n/a      | n/a        | 30%                  | Pass           |                    |
| Acid Neutralising Capacity - Acidity units (a-ANCE)               | B18-No36075   | СР                       | mol H+/t    | n/a      | n/a      | n/a        | 30%                  | Pass           |                    |
| ANC Fineness Factor   | B18-No36075   | CP                       | factor      | 1.5      | 1.5      | <1         | 30%                  | Pass           |                    |
| SPOCAS - Net Acidity (Sulfur<br>Units)                            | B18-No36075   | СР                       | % S         | < 0.02   | < 0.02   | <1         | 30%                  | Pass           |                    |
| SPOCAS - Net Acidity (Acidity                                     | B18-No36075   | CP                       | mol H+/t    | < 10     | < 10     | <i>c</i> 1 | 30%                  | Pass           |                    |
| SPOCAS - Liming rate  | B18-No36075   | CP                       | ka CaCO3/t  | < 1      | < 10     | <1         | 30%                  | Pass           |                    |
|   | Biolicocolo   | 01                       | ing out ook |          |          |            | 0070                 | 1 400          |                    |
| Chromium Suite  |               |                          |             | Result 1 | Result 2 | RPD        |                      |                |                    |
| Chromium Reducible Sulfur   | B18-No36075   | CP                       | % S         | < 0.005  | < 0.005  | <1         | 30%                  | Pass           |                    |
| Chromium Reducible Sulfur -acidity                                | B18 No26075   | CP                       |             | - 3      | - 2      | -1         | 30%                  | Page           |                    |
| Acid Neutralising Capacity (ANCht)                                | B18-No36075   |                          | %CaCO2      | n/2      | n/2      | n/2        | 30%                  | Pass           |                    |
| Acid Neutralising Capacity -                                      | D 10-11030073 | 01                       | 76CaCO3     | ,<br>,   | , 11/a   | ,<br>,     | 30%                  | 1 033          |                    |
| equivalent 5% pyrite (s-ANCbt)<br>CRS Suite - Net Acidity (Sulfur | B18-N036075   | CP                       | % S         | n/a      | n/a      | n/a        | 30%                  | Pass           |                    |
| Units)<br>CRS Suite - Net Acidity (Acidity                        | B18-No36075   | CP                       | % S         | < 0.02   | < 0.02   | <1         | 30%                  | Pass           |                    |
| Units)  | B18-No36075   | CP                       | mol H+/t    | < 10     | < 10     | <1         | 30%                  | Pass           |                    |
| CRS Suite - Liming Rate   | B18-No36075   | CP                       | kg CaCO3/t  | < 1      | < 1      | <1         | 30%                  | Pass           | 1                  |



| Duplicate  |             |     |   |          |          |     |     |      |  |
|------------|-------------|-----|---|----------|----------|-----|-----|------|--|
|            |             |     |   | Result 1 | Result 2 | RPD |     |      |  |
| % Moisture | B18-Oc34425 | NCP | % | 14       | 15       | 7.0 | 30% | Pass |  |



### Comments

Eurofins | mgt accreditation number 1261, corporate site 1254 is currently in progress of a controlled transition to a new custom built location at 6 Monterey Road, Dandenong South, Victoria 3175. All results on this report denoted as being performed by Eurofins | mgt 2-5 Kingston Town Close, Oakleigh Victoria 3166 corporate site 1254, will have been performed on either Oakleigh or new Dandenong South site.

| Sample Integrity  |     |
|---|-----|
| Custody Seals Intact (if used)  | N/A |
| Attempt to Chill was evident  | Yes |
| Sample correctly preserved  | Yes |
| Appropriate sample containers have been used                            | Yes |
| Sample containers for volatile analysis received with minimal headspace | Yes |
| Samples received within HoldingTime                                     | Yes |
| Some samples have been subcontracted                                    | No  |

### **Qualifier Codes/Comments**

### Code Description

| S01 | Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil' multiply 'reported results' x 'wet bulk density of soil in t/m3' |
|-----|---|
| S02 | Retained Acidity is Reported when the pHKCI is less than pH 4.5   |
| S03 | Acid Neutralising Capacity is only required if the pHKCl if greater than or equal to pH 6.5   |
| S04 | Acid Sulfate Soil Samples have a 24 hour holding time unless frozen or dried within that period   |

### Authorised By

Nibha Vaidya Myles Clark

Analytical Services Manager Senior Analyst-SPOCAS (QLD)

Glenn Jackson General Manager Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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## **Enviro Sample Bris**

From: Sent: To: Subject: Attachments: Nibha Vaidya Friday, 23 November 2018 10:28 AM Enviro Sample Bris 5 DAY TAT - FW: 62789 Acid Sulfate Request 80818157\_101118\_Soil\_CRS\_COC.xlsx

Follow Up Flag: Flag Status: Follow up Flagged

Categories:

Printed - awaiting completion

23/11/19 12:00p

Kind Regards,

Nibha Vaidya Phone : +61 2 9900 8415 Mobile : +61 499 900 805 Email : <u>NibhaVaidya@eurofins.com</u>

From: Ben Withnall [<u>mailto:ben.withnall@cardno.com.au</u>] Sent: Friday, 23 November 2018 9:48 AM To: Nibha Vaidya Cc: Joel Griffiths Subject: 62789 Acid Sulfate Request

### EXTERNAL EMAIL\*

Hi Nibha,

Happy Friday! For lab report 627289 for our job 80818157 Kyeemagh I've attached an additional analysis request for SPOCAS and CRS on some samples we had pHFOX done on.

Thanks very much.

Ben Withnall ENVIRONMENTAL SCIENTIST CARDNO



Phone Fax +61 2 9439 5170 Direct +61 2 9495 8188 Address Level 9, The Forum, 203 Pacific Highway, St Leonards, New South Wales 2065 Australia

Email ben.withnall@cardno.com.au Web www.cardno.com



Cardno's management systems are certified to ISO9001 (quality) and AS4801/OHSAS18001 (occupational health and safety)

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Melbourne Melbourne 3-5 Kingston Town Close Oakleigh Vic 3166 Phone : +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271

Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217

Brishane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794 Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 NATA # 1261 Site # 23736

ABN - 50 005 085 521

e.mail : EnviroSales@eurofins.com

web : www.eurofins.com.au

# Sample Receipt Advice

| Cardno (NSW/ACT) Pty Ltd |
|--------------------------|
| Ben Withnall             |
| KYEEMAGH INFANTS SCHOOL  |
| 80818157                 |
| Not provided             |
| 5 Day                    |
| Nov 23, 2018 12:00 PM    |
| 629911                   |
|                          |

### Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- $\mathbf{V}$ Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- $\mathbf{V}$ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- $\boxtimes$ Split sample sent to requested external lab.
- $\boxtimes$ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

# Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Ben Withnall - ben.withnall@cardno.com.au.

Note: A copy of these results will also be delivered to the general Cardno (NSW/ACT) Pty Ltd email address.

38 Years of Environmental Analysis & Experience







Cardno (NSW/ACT) Pty Ltd Level 9, 203 Pacific Highway St Leonards NSW 2065





NATA Accredited Accreditation Number 1261 Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Ben Withnall

| Report        |
|---------------|
| Project name  |
| Project ID    |
| Received Date |

629653-W KYEEMAGH INFANTS SCHOOL 80818157 Nov 23, 2018

| Client Sample ID                                 |       |      | MW01         | MW02         | MW03         | QA100        |
|--|-------|------|--------------|--------------|--------------|--------------|
| Sample Matrix                                    |       |      | Water        | Water        | Water        | Water        |
| Eurofins   mgt Sample No.                        |       |      | S18-No34063  | S18-No34064  | S18-No34065  | S18-No34066  |
| Date Sampled                                     |       |      | Nov 23, 2018 | Nov 23, 2018 | Nov 23, 2018 | Nov 23, 2018 |
| Test/Reference                                   | LOR   | Unit |              |              |              |              |
| Total Recoverable Hydrocarbons - 1999 NEPM Fract | ions  |      |              |              |              |              |
| TRH C6-C9  | 0.02  | mg/L | < 0.02       | < 0.02       | < 0.02       | < 0.02       |
| TRH C10-C14                                      | 0.05  | mg/L | < 0.05       | < 0.05       | < 0.05       | < 0.05       |
| TRH C15-C28                                      | 0.1   | mg/L | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| TRH C29-C36                                      | 0.1   | mg/L | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| TRH C10-36 (Total)                               | 0.1   | mg/L | < 0.1        | < 0.1        | < 0.1        | < 0.1        |
| Volatile Organics                                |       |      |              |              |              |              |
| 1.1-Dichloroethane                               | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 1.1-Dichloroethene                               | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 1.1.1-Trichloroethane                            | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 1.1.1.2-Tetrachloroethane                        | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 1.1.2-Trichloroethane                            | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 1.1.2.2-Tetrachloroethane                        | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 1.2-Dibromoethane                                | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 1.2-Dichlorobenzene                              | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 1.2-Dichloroethane                               | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 1.2-Dichloropropane                              | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 1.2.3-Trichloropropane                           | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 1.2.4-Trimethylbenzene                           | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 1.3-Dichlorobenzene                              | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 1.3-Dichloropropane                              | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 1.3.5-Trimethylbenzene                           | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 1.4-Dichlorobenzene                              | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 2-Butanone (MEK)                                 | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 2-Propanone (Acetone)                            | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 4-Chlorotoluene                                  | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 4-Methyl-2-pentanone (MIBK)                      | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Allyl chloride                                   | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Benzene  | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Bromobenzene                                     | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Bromochloromethane                               | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Bromodichloromethane                             | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Bromoform  | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Bromomethane                                     | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Carbon disulfide                                 | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Carbon Tetrachloride                             | 0.001 | mg/L | < 0.001      | < 0.001      | < 0.001      | < 0.001      |



| Client Sample ID                                  |       |       | MW01          | MW02         | MW03         | QA100         |
|---|-------|-------|---------------|--------------|--------------|---------------|
| Sample Matrix                                     |       |       | Water         | Water        | Water        | Water         |
| Eurofins I mgt Sample No.                         |       |       | S18-No34063   | S18-No34064  | S18-No34065  | S18-No34066   |
| Date Sampled                                      |       |       | Nov 23, 2018  | Nov 23 2018  | Nov 23 2018  | Nov 23 2018   |
| Test/Poference                                    |       | Linit | 1007 20, 2010 | 107 20, 2010 | 107 20, 2010 | 1007 20, 2010 |
| Volatile Organics                                 | LOK   | Unit  |               |              |              |               |
| Chlorobonzono                                     | 0.001 | ma/l  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Chloroethane                                      | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Chloroform  | 0.001 | ma/l  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Chloromethane                                     | 0.000 | mg/L  | < 0.003       | < 0.000      | < 0.003      | < 0.003       |
| cis-1 2-Dichloroethene                            | 0.001 | ma/l  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| cis-1.3-Dichloropropene                           | 0.001 | ma/l  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Dibromochloromethane                              | 0.001 | ma/l  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Dibromomethane                                    | 0.001 | ma/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Dichlorodifluoromethane                           | 0.001 | ma/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Ethylbenzene                                      | 0.001 | ma/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Iodomethane                                       | 0.001 | ma/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Isopropyl benzene (Cumene)                        | 0.001 | ma/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| m&p-Xylenes                                       | 0.002 | mg/L  | < 0.002       | < 0.002      | < 0.002      | < 0.002       |
| Methylene Chloride                                | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| o-Xylene  | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Styrene   | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Tetrachloroethene                                 | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Toluene   | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| trans-1.2-Dichloroethene                          | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| trans-1.3-Dichloropropene                         | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Trichloroethene                                   | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Trichlorofluoromethane                            | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Vinyl chloride                                    | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Xylenes - Total                                   | 0.003 | mg/L  | < 0.003       | < 0.003      | < 0.003      | < 0.003       |
| Total MAH*  | 0.003 | mg/L  | < 0.003       | < 0.003      | < 0.003      | < 0.003       |
| Vic EPA IWRG 621 CHC (Total)*                     | 0.005 | mg/L  | < 0.005       | < 0.005      | < 0.005      | < 0.005       |
| Vic EPA IWRG 621 Other CHC (Total)*               | 0.005 | mg/L  | < 0.005       | < 0.005      | < 0.005      | < 0.005       |
| 4-Bromofluorobenzene (surr.)                      | 1     | %     | 89            | 88           | 85           | 80            |
| Toluene-d8 (surr.)                                | 1     | %     | 78            | 90           | 78           | 67            |
| Total Recoverable Hydrocarbons - 2013 NEPM Fract  | ions  |       |               |              |              |               |
| Naphthalene <sup>N02</sup>                        | 0.01  | mg/L  | < 0.01        | < 0.01       | < 0.01       | < 0.01        |
| TRH C6-C10  | 0.02  | mg/L  | < 0.02        | < 0.02       | < 0.02       | < 0.02        |
| TRH C6-C10 less BTEX (F1) <sup>N04</sup>          | 0.02  | mg/L  | < 0.02        | < 0.02       | < 0.02       | < 0.02        |
| TRH >C10-C16                                      | 0.05  | mg/L  | < 0.05        | < 0.05       | < 0.05       | < 0.05        |
| TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup> | 0.05  | mg/L  | < 0.05        | < 0.05       | < 0.05       | < 0.05        |
| TRH >C16-C34                                      | 0.1   | mg/L  | < 0.1         | < 0.1        | < 0.1        | < 0.1         |
| TRH >C34-C40                                      | 0.1   | mg/L  | < 0.1         | < 0.1        | < 0.1        | < 0.1         |
| TRH >C10-C40 (total)*                             | 0.1   | mg/L  | < 0.1         | < 0.1        | < 0.1        | < 0.1         |
| Polycyclic Aromatic Hydrocarbons                  |       |       |               |              |              |               |
| Acenaphthene                                      | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Acenaphthylene                                    | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Anthracene  | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Benz(a)anthracene                                 | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Benzo(a)pyrene                                    | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Benzo(b&j)fluoranthene <sup>N07</sup>             | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Benzo(g.h.i)perylene                              | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Benzo(k)fluoranthene                              | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Chrysene  | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |
| Dibenz(a.h)anthracene                             | 0.001 | mg/L  | < 0.001       | < 0.001      | < 0.001      | < 0.001       |



| Client Sample ID  |       |               | MW01         | MW02         | MW03         | QA100        |
|---|-------|---------------|--------------|--------------|--------------|--------------|
| Sample Matrix   |       |               | Water        | Water        | Water        | Water        |
| Eurofins I mgt Sample No.   |       |               | S18-No34063  | S18-No34064  | S18-No34065  | S18-No34066  |
| Date Sampled  |       |               | Nov 23, 2018 | Nov 23, 2018 | Nov 23, 2018 | Nov 23, 2018 |
|   |       | Linit         | 100 23, 2010 | 100 23, 2010 | 107 23, 2010 | 100 23, 2010 |
| Polycyclic Aromatic Hydrocarbons  | LOR   | Unit          |              |              |              |              |
| Fluoranthono  | 0.001 | ma/l          | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Fluorene  | 0.001 | mg/L          | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
|   | 0.001 | mg/L          | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Naphthalene   | 0.001 | ma/l          | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Phenanthrene  | 0.001 | ma/L          | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Pyrene  | 0.001 | mg/L          | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| Total PAH*  | 0.001 | mg/L          | < 0.001      | < 0.001      | < 0.001      | < 0.001      |
| 2-Fluorobiphenyl (surr.)  | 1     | %             | 72           | 67           | 71           | 77           |
| p-Terphenyl-d14 (surr.)   | 1     | %             | 84           | 73           | 76           | 84           |
| Perfluoroalkyl carboxylic acids (PFCAs)   |       |               |              |              |              |              |
| Perfluorobutanoic acid (PFBA) <sup>N11</sup>                                    | 0.05  | ug/L          | < 0.05       | < 0.05       | < 0.05       | < 0.05       |
| Perfluoropentanoic acid (PFPeA) <sup>N11</sup>                                  | 0.01  | ug/L          | < 0.01       | < 0.01       | < 0.01       | < 0.01       |
| Perfluorohexanoic acid (PFHxA) <sup>N11</sup>                                   | 0.01  | ug/L          | < 0.01       | < 0.01       | < 0.01       | < 0.01       |
| Perfluoroheptanoic acid (PFHpA) <sup>N11</sup>                                  | 0.01  | ug/L          | < 0.01       | < 0.01       | < 0.01       | < 0.01       |
| Perfluorooctanoic acid (PFOA) <sup>N11</sup>                                    | 0.01  | ug/L          | < 0.01       | < 0.01       | < 0.01       | < 0.01       |
| Perfluorononanoic acid (PFNA) <sup>N11</sup>                                    | 0.01  | ug/L          | < 0.01       | < 0.01       | < 0.01       | < 0.01       |
| Perfluorodecanoic acid (PFDA) <sup>N11</sup>                                    | 0.01  | ug/L          | < 0.01       | < 0.01       | < 0.01       | < 0.01       |
| Perfluoroundecanoic acid (PFUnDA) <sup>N11</sup>                                | 0.01  | ug/L          | < 0.01       | < 0.01       | < 0.01       | < 0.01       |
| Perfluorododecanoic acid (PFDoDA) <sup>N11</sup>                                | 0.01  | ug/L          | < 0.01       | < 0.01       | < 0.01       | < 0.01       |
| Perfluorotridecanoic acid (PFTrDA) <sup>N15</sup>                               | 0.01  | ug/L          | < 0.01       | < 0.01       | < 0.01       | < 0.01       |
| Perfluorotetradecanoic acid (PFTeDA) <sup>N11</sup>                             | 0.01  | ug/L          | < 0.01       | < 0.01       | < 0.01       | < 0.01       |
| 13C4-PFBA (surr.)   | 1     | %             | 103          | 107          | 109          | 107          |
| 13C5-PFPeA (surr.)  | 1     | %             | 102          | 105          | 108          | 107          |
| 13C5-PFHxA (surr.)  | 1     | %             | 120          | 123          | 122          | 123          |
| 13C4-PFHpA (surr.)  | 1     | %             | 114          | 116          | 114          | 115          |
| 13C8-PFOA (surr.)   | 1     | %             | 106          | 109          | 104          | 106          |
| 13C5-PFNA (surr.)   | 1     | %             | 128          | 136          | 135          | 133          |
| 13C0-PFDA (suff.)   | 1     | %<br>0/       | 133          | 135          | 139          | 137          |
| 13C2-PFUIDA (suit.)   | 1     | 70<br>0/      | 74           | 99           | 103          | 90           |
| 13C2-PFD0DA (suit.)   | 1     | - 70<br>- 0/_ | 52           | 64           | 70           | 54           |
| Perfluoroalkyl sulfonamido substances   | I     | /0            | 52           | 04           | 70           | 54           |
| Perfluorooctane sulfonamide (EOSA) <sup>N11</sup>                               | 0.05  | ug/l          | < 0.05       | < 0.05       | < 0.05       | < 0.05       |
| N-methylperfluoro-1-octane sulfonamide (N-<br>MeFOSA) <sup>N11</sup>            | 0.05  |               | < 0.05       | < 0.05       | < 0.05       | < 0.05       |
| N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA) <sup>N11</sup>                 | 0.05  | ug/L          | < 0.05       | < 0.05       | < 0.05       | < 0.05       |
| 2-(N-methylperfluoro-1-octane sulfonamido)-ethanol<br>(N-MeFOSE) <sup>N11</sup> | 0.05  | ug/L          | < 0.05       | < 0.05       | < 0.05       | < 0.05       |
| 2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-<br>EtFOSE) <sup>N11</sup> | 0.05  | ug/L          | < 0.05       | < 0.05       | < 0.05       | < 0.05       |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (N-<br>EtFOSAA) <sup>N11</sup>    | 0.05  | ug/L          | < 0.05       | < 0.05       | < 0.05       | < 0.05       |
| N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA) <sup>N11</sup>       | 0.05  | ug/L          | < 0.05       | < 0.05       | < 0.05       | < 0.05       |
| 13C8-FOSA (surr.)   | 1     | %             | 67           | 60           | 67           | 65           |
| D3-N-MeFOSA (surr.)   | 1     | %             | INT          | 11           | 18           | 12           |
| D5-N-EtFOSA (surr.)   | 1     | %             | INT          | 10           | 18           | INT          |
| D7-N-MeFOSE (surr.)   | 1     | %             | 19           | 30           | 34           | 22           |
| D9-N-EtFOSE (surr.)   | 1     | %             | 18           | 29           | 31           | 22           |
| D5-N-EtFOSAA (surr.)  | 1     | %             | 38           | 61           | 51           | 45           |
| D3-N-MeFOSAA (surr.)  | 1     | %             | 33           | 57           | 42           | 42           |



| Client Sample ID  |        |      | MW01                | MW02         | MW03                | QA100        |
|---|--------|------|---------------------|--------------|---------------------|--------------|
| Sample Matrix   |        |      | Water               | Water        | Water               | Water        |
| Eurofins   mgt Sample No.   |        |      | S18-No34063         | S18-No34064  | S18-No34065         | S18-No34066  |
| Date Sampled  |        |      | Nov 23, 2018        | Nov 23, 2018 | Nov 23, 2018        | Nov 23, 2018 |
| Test/Reference  | LOR    | Unit |                     |              |                     |              |
| Perfluoroalkyl sulfonic acids (PFSAs)                                 |        |      |                     |              |                     |              |
| Perfluorobutanesulfonic acid (PFBS) <sup>N11</sup>                    | 0.01   | ug/L | < 0.01              | < 0.01       | < 0.01              | < 0.01       |
| Perfluoropentanesulfonic acid (PFPeS) <sup>N15</sup>                  | 0.01   | ug/L | < 0.01              | < 0.01       | < 0.01              | < 0.01       |
| Perfluorohexanesulfonic acid (PFHxS) <sup>N11</sup>                   | 0.01   | ug/L | <sup>N09</sup> 0.02 | < 0.01       | <sup>N09</sup> 0.01 | < 0.01       |
| Perfluoroheptanesulfonic acid (PFHpS) <sup>N15</sup>                  | 0.01   | ug/L | < 0.01              | < 0.01       | < 0.01              | < 0.01       |
| Perfluorooctanesulfonic acid (PFOS) <sup>N11</sup>                    | 0.01   | ug/L | < 0.01              | < 0.01       | < 0.01              | < 0.01       |
| Perfluorodecanesulfonic acid (PFDS) <sup>N15</sup>                    | 0.01   | ug/L | < 0.01              | < 0.01       | < 0.01              | < 0.01       |
| 13C3-PFBS (surr.)   | 1      | %    | 129                 | 134          | 130                 | 132          |
| 18O2-PFHxS (surr.)  | 1      | %    | 128                 | 130          | 127                 | 129          |
| 13C8-PFOS (surr.)   | 1      | %    | 128                 | 125          | 127                 | 130          |
| n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)                          |        |      |                     |              |                     |              |
| 1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA) <sup>N11</sup>    | 0.01   | ug/L | < 0.01              | < 0.01       | < 0.01              | < 0.01       |
| 1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2<br>FTSA) <sup>N11</sup> | 0.05   | ug/L | < 0.05              | < 0.05       | < 0.05              | < 0.05       |
| 1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2<br>FTSA) <sup>N11</sup> | 0.01   | ug/L | < 0.01              | < 0.01       | < 0.01              | < 0.01       |
| 1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)^{N15}          | 0.01   | ug/L | < 0.01              | < 0.01       | < 0.01              | < 0.01       |
| 13C2-4:2 FTSA (surr.)   | 1      | %    | 105                 | 106          | 104                 | 105          |
| 13C2-6:2 FTSA (surr.)   | 1      | %    | 137                 | 140          | 132                 | 133          |
| 13C2-8:2 FTSA (surr.)   | 1      | %    | 165                 | 162          | 174                 | 164          |
| PFASs Summations  |        |      |                     |              |                     |              |
| Sum (PFHxS + PFOS)*   | 0.01   | ug/L | 0.02                | < 0.01       | 0.01                | < 0.01       |
| Sum of US EPA PFAS (PFOS + PFOA)*                                     | 0.01   | ug/L | < 0.01              | < 0.01       | < 0.01              | < 0.01       |
| Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*                           | 0.01   | ug/L | 0.02                | < 0.01       | 0.01                | < 0.01       |
| Sum of WA DWER PFAS (n=10)*   | 0.05   | ug/L | < 0.05              | < 0.05       | < 0.05              | < 0.05       |
| Sum of PFASs (n=28)*  | 0.1    | ug/L | < 0.1               | < 0.1        | < 0.1               | < 0.1        |
| Heavy Metals  |        |      |                     |              |                     |              |
| Arsenic (filtered)  | 0.001  | mg/L | < 0.001             | < 0.001      | < 0.001             | < 0.001      |
| Cadmium (filtered)  | 0.0002 | mg/L | < 0.0002            | < 0.0002     | < 0.0002            | < 0.0002     |
| Chromium (filtered)   | 0.001  | mg/L | 0.002               | < 0.001      | 0.002               | < 0.001      |
| Copper (filtered)   | 0.001  | mg/L | 0.002               | < 0.001      | 0.001               | < 0.001      |
| Lead (filtered)   | 0.001  | mg/L | < 0.001             | < 0.001      | < 0.001             | < 0.001      |
| Mercury (filtered)  | 0.0001 | mg/L | < 0.0001            | < 0.0001     | < 0.0001            | < 0.0001     |
| Nickel (filtered)   | 0.001  | mg/L | < 0.001             | 0.001        | 0.004               | 0.002        |
| Zinc (filtered)   | 0.005  | mg/L | < 0.005             | < 0.005      | 0.006               | < 0.005      |


### Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

| Description  | Testing Site | Extracted    | Holding Time |
|--|--------------|--------------|--------------|
| Eurofins   mgt Suite B8 (filtered metals)                              |              |              |              |
| Total Recoverable Hydrocarbons - 1999 NEPM Fractions                   | Sydney       | Nov 26, 2018 | 7 Day        |
| - Method: LTM-ORG-2010 TRH C6-C40                                      |              |              |              |
| Volatile Organics  | Sydney       | Nov 26, 2018 | 7 Days       |
| - Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices |              |              |              |
| Total Recoverable Hydrocarbons - 2013 NEPM Fractions                   | Sydney       | Nov 26, 2018 | 7 Day        |
| - Method: LTM-ORG-2010 TRH C6-C40                                      |              |              |              |
| Total Recoverable Hydrocarbons - 2013 NEPM Fractions                   | Sydney       | Nov 26, 2018 | 7 Day        |
| - Method: LTM-ORG-2010 TRH C6-C40                                      |              |              |              |
| Polycyclic Aromatic Hydrocarbons                                       | Sydney       | Nov 26, 2018 | 7 Days       |
| - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water               |              |              |              |
| Metals M8 filtered   | Sydney       | Nov 26, 2018 | 28 Day       |
| - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS   |              |              |              |
| Per- and Polyfluoroalkyl Substances (PFASs)                            |              |              |              |
| Perfluoroalkyl carboxylic acids (PFCAs)                                | Brisbane     | Nov 28, 2018 | 14 Day       |
| - Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)      |              |              |              |
| Perfluoroalkyl sulfonamido substances                                  | Brisbane     | Nov 28, 2018 | 14 Day       |
| - Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)      |              |              |              |
| Perfluoroalkyl sulfonic acids (PFSAs)                                  | Brisbane     | Nov 28, 2018 | 14 Day       |
| - Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)      |              |              |              |
| n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)                           | Brisbane     | Nov 28, 2018 | 14 Day       |
| - Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)      |              |              |              |

| 🔅 eur   | ofins  | mgt  |                  | ABN– 50 005 (<br>e.mail : Enviro<br>web : www.eur | )85 521<br>Sales@<br>ofins.co             | eurofins.c<br>m.au                          | Melbourne<br>2-5 Kingston Town Close<br>Oakleigh VIC 3166<br>Phone : +61 3 8564 5000<br>om NATA # 1261<br>Site # 1254 & 14271 | Sydney<br>Unit F3, Building F<br>16 Mars Road<br>Lane Cove West NSW 2066<br>Phone : +61 2 9900 8400<br>NATA # 1261 Site # 18217 | Brisbane<br>1/21 Smallwood Place<br>Murarrie QLD 4172<br>Phone : +61 7 3902 4600<br>NATA # 1261 Site # 2079 | Perth<br>2/91 Leach Highway<br>Kewdale WA 6105<br>0 Phone: +61 8 9251 9600<br>94 NATA # 1261<br>Site # 23736 |
|---|--|--|------------------|---|---|---|---|---|---|--|
| Company Name:<br>Address:<br>Project Name:<br>Project ID: | Cardno (NSV<br>Level 9, 203<br>St Leonards<br>NSW 2065<br>KYEEMAGH<br>80818157 | V/ACT) Pty Lt<br>Pacific Highw<br>INFANTS SC | d<br>ay<br>CHOOL |   |   | Ord<br>Rep<br>Pho<br>Fax                    | er No.:<br>ort #: 629653<br>ne: 0294967700<br>02 9499 3902  | Eurofii   | Received:<br>Due:<br>Priority:<br>Contact Name:<br>ns   mgt Analytical Se                                   | Nov 23, 2018 5:43 PM<br>Nov 30, 2018<br>5 Day<br>Ben Withnall<br>rvices Manager : Nibha Vaidya               |
|   | Sa   | mple Detail                                  |                  |   | Eurofins   mgt Suite B8 (filtered metals) | Per- and Polyfluoroalkyl Substances (PFASs) |   |   |   |  |
| Melbourne Laborat   | ory - NATA Site  | # 1254 & 142                                 | 71               |   |   |   |   |   |   |  |
| Sydney Laboratory   | - NATA Site # 1  | 8217<br>20794                                |                  |   | X   | x   |   |   |   |  |
| Perth Laboratory -  | NATA Site # 237  | 36   |                  |   |   |   |   |   |   |  |
| External Laborator  | 1  |  |                  |   |   |   |   |   |   |  |
| No Sample ID  | Sample Date  | Sampling<br>Time                             | Matrix           | LAB ID  |   |   |   |   |   |  |
| 1 MW01  | Nov 23, 2018   |  | Water            | S18-No34063                                       | х   | х   |   |   |   |  |
| 2 MW02  | Nov 23, 2018   |  | Water            | S18-No34064                                       | х   | х   |   |   |   |  |
| 3 MW03  | Nov 23, 2018   |  | Water            | S18-No34065                                       | х   | x   |   |   |   |  |
| 4 QA100   | Nov 23, 2018   |  | Water            | S18-No34066                                       | Х   | Х   |   |   |   |  |
| Test Counts   |  |  |                  |   | 4   | 4   |   |   |   |  |



#### Internal Quality Control Review and Glossary

#### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.

- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- 4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- 6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- 7. Samples were analysed on an 'as received' basis.
- 8. This report replaces any interim results previously issued.

#### **Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days. \*\*NOTE: pH duplicates are reported as a range NOT as RPD

#### Units

| mg/kg: milligrams per kilogram           | mg/L: milligrams per litre         | ug/L: micrograms per litre                                       |
|--|------------------------------------|--|
| ppm: Parts per million                   | ppb: Parts per billion             | %: Percentage  |
| org/100mL: Organisms per 100 millilitres | NTU: Nephelometric Turbidity Units | MPN/100mL: Most Probable Number of organisms per 100 millilitres |

#### Terms

| Dry              | Where a moisture has been determined on a solid sample the result is expressed on a dry basis.   |
|------------------|--|
| LOR              | Limit of Reporting.  |
| SPIKE            | Addition of the analyte to the sample and reported as percentage recovery.   |
| RPD              | Relative Percent Difference between two Duplicate pieces of analysis.  |
| LCS              | Laboratory Control Sample - reported as percent recovery.  |
| CRM              | Certified Reference Material - reported as percent recovery.   |
| Method Blank     | In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.     |
| Surr - Surrogate | The addition of a like compound to the analyte target and reported as percentage recovery.   |
| Duplicate        | A second piece of analysis from the same sample and reported in the same units as the result to show comparison.   |
| USEPA            | United States Environmental Protection Agency  |
| APHA             | American Public Health Association   |
| TCLP             | Toxicity Characteristic Leaching Procedure   |
| сос              | Chain of Custody   |
| SRA              | Sample Receipt Advice  |
| QSM              | Quality Systems Manual ver 5.1 US Department of Defense  |
| СР               | Client Parent - QC was performed on samples pertaining to this report  |
| NCP              | Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within. |
| TEQ              | Toxic Equivalency Quotient   |

#### **QC** - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

#### **QC Data General Comments**

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike.
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



### **Quality Control Results**

| Test   | Units | Result 1 |   | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|--|-------|----------|---|----------------------|----------------|--------------------|
| Method Blank   |       | 1        | 1 | -                    | -              |                    |
| Total Recoverable Hydrocarbons - 1999 NEPM Fractions |       |          |   |                      |                |                    |
| TRH C6-C9  | mg/L  | < 0.02   |   | 0.02                 | Pass           |                    |
| TRH C10-C14  | mg/L  | < 0.05   |   | 0.05                 | Pass           |                    |
| TRH C15-C28  | mg/L  | < 0.1    |   | 0.1                  | Pass           |                    |
| TRH C29-C36  | mg/L  | < 0.1    |   | 0.1                  | Pass           |                    |
| Method Blank   |       | 1        | 1 | 1                    | r              |                    |
| Volatile Organics                                    |       |          |   |                      |                |                    |
| 1.1-Dichloroethane                                   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.1-Dichloroethene                                   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.1.1-Trichloroethane                                | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.1.1.2-Tetrachloroethane                            | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.1.2-Trichloroethane                                | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.1.2.2-Tetrachloroethane                            | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.2-Dibromoethane                                    | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.2-Dichlorobenzene                                  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.2-Dichloroethane                                   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.2-Dichloropropane                                  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.2.3-Trichloropropane                               | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.2.4-Trimethylbenzene                               | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.3-Dichlorobenzene                                  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.3-Dichloropropane                                  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.3.5-Trimethylbenzene                               | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 1.4-Dichlorobenzene                                  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 2-Butanone (MEK)                                     | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 2-Propanone (Acetone)                                | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 4-Chlorotoluene                                      | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| 4-Methyl-2-pentanone (MIBK)                          | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Allyl chloride                                       | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Benzene  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Bromobenzene   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Bromochloromethane                                   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Bromodichloromethane                                 | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Bromoform  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Bromomethane   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Carbon disulfide                                     | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Carbon Tetrachloride                                 | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Chlorobenzene  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Chloroethane   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Chloroform   | mg/L  | < 0.005  |   | 0.005                | Pass           |                    |
| Chloromethane  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| cis-1.2-Dichloroethene                               | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| cis-1.3-Dichloropropene                              | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Dibromochloromethane                                 | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Dibromomethane                                       | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Dichlorodifluoromethane                              | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Ethylbenzene   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| lodomethane  | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| Isopropyl benzene (Cumene)                           | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| m&p-Xylenes  | mg/L  | < 0.002  |   | 0.002                | Pass           |                    |
| Methylene Chloride                                   | mg/L  | < 0.001  |   | 0.001                | Pass           |                    |
| o-Xylene   | mg/L  | < 0.001  |   | <br>0.001            | Pass           |                    |



| Test  | Units | Result 1 | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|---|-------|----------|----------------------|----------------|--------------------|
| Styrene   | ma/L  | < 0.001  | 0.001                | Pass           |                    |
| Tetrachloroethene   | ma/L  | < 0.001  | 0.001                | Pass           |                    |
| Toluene   | ma/L  | < 0.001  | 0.001                | Pass           |                    |
| trans-1.2-Dichloroethene  | ma/L  | < 0.001  | 0.001                | Pass           |                    |
| trans-1.3-Dichloropropene   | ma/L  | < 0.001  | 0.001                | Pass           |                    |
| Trichloroethene   | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Trichlorofluoromethane  | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Vinyl chloride  | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Xylenes - Total   | mg/L  | < 0.003  | 0.003                | Pass           |                    |
| Method Blank  |       |          | •                    |                |                    |
| Total Recoverable Hydrocarbons - 2013 NEPM Fractions              |       |          |                      |                |                    |
| Naphthalene   | mg/L  | < 0.01   | 0.01                 | Pass           |                    |
| TRH C6-C10  | mg/L  | < 0.02   | 0.02                 | Pass           |                    |
| TRH >C10-C16  | mg/L  | < 0.05   | 0.05                 | Pass           |                    |
| TRH >C16-C34  | mg/L  | < 0.1    | 0.1                  | Pass           |                    |
| TRH >C34-C40  | mg/L  | < 0.1    | 0.1                  | Pass           |                    |
| Method Blank  |       |          |                      |                |                    |
| Polycyclic Aromatic Hydrocarbons                                  |       |          |                      |                |                    |
| Acenaphthene  | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Acenaphthylene  | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Anthracene  | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Benz(a)anthracene   | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Benzo(a)pyrene  | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Benzo(b&j)fluoranthene  | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Benzo(g.h.i)perylene  | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Benzo(k)fluoranthene  | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Chrysene  | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Dibenz(a.h)anthracene   | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Fluoranthene  | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Fluorene  | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Indeno(1.2.3-cd)pyrene  | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Naphthalene   | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Phenanthrene  | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Pyrene  | mg/L  | < 0.001  | 0.001                | Pass           |                    |
| Method Blank  |       |          |                      |                |                    |
| Perfluoroalkyl carboxylic acids (PFCAs)                           | -     |          |                      |                |                    |
| Perfluorobutanoic acid (PFBA)                                     | ug/L  | < 0.05   | 0.05                 | Pass           |                    |
| Perfluoropentanoic acid (PFPeA)                                   | ug/L  | < 0.01   | 0.01                 | Pass           |                    |
| Perfluorohexanoic acid (PFHxA)                                    | ug/L  | < 0.01   | 0.01                 | Pass           |                    |
| Perfluoroheptanoic acid (PFHpA)                                   | ug/L  | < 0.01   | 0.01                 | Pass           |                    |
| Perfluorooctanoic acid (PFOA)                                     | ug/L  | < 0.01   | 0.01                 | Pass           |                    |
| Perfluorononanoic acid (PFNA)                                     | ug/L  | < 0.01   | 0.01                 | Pass           |                    |
| Perfluorodecanoic acid (PFDA)                                     | ug/L  | < 0.01   | 0.01                 | Pass           |                    |
| Perfluoroundecanoic acid (PFUnDA)                                 | ug/L  | < 0.01   | 0.01                 | Pass           |                    |
| Perfluorododecanoic acid (PFDoDA)                                 | ug/L  | < 0.01   | 0.01                 | Pass           |                    |
| Perfluorotridecanoic acid (PFTrDA)                                | ug/L  | < 0.01   | 0.01                 | Pass           |                    |
| Perfluorotetradecanoic acid (PFTeDA)                              | ug/L  | < 0.01   | 0.01                 | Pass           |                    |
| Method Blank  |       |          |                      | -              |                    |
| Perfluoroalkyl sulfonamido substances                             |       |          |                      |                |                    |
| Perfluorooctane sulfonamide (FOSA)                                | ug/L  | < 0.05   | 0.05                 | Pass           |                    |
| N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)                 | ug/L  | < 0.05   | 0.05                 | Pass           |                    |
| N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)                  | ug/L  | < 0.05   | 0.05                 | Pass           |                    |
| 2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-<br>MeFOSE) | ug/L  | < 0.05   | 0.05                 | Pass           |                    |
| 2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)      | ug/L  | < 0.05   | 0.05                 | Pass           |                    |



| Nethy-perfluencectanesulfonamidsactic and IN-EIFOSAA         ugit         < 0.05   | Test   | Units                   | Result 1   | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |      |       |  |
|--|--|-------------------------|--|----------------------|----------------|--------------------|------|-------|--|
| Nmmthylperflutorocianesulfonamideagelic acid (NMePOSA)         ugl.         < 0.05         0.05         Perss           Perfluto Oblamo (add (PFSA)         ugl.         < 0.01  | N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)  | ug/L                    | < 0.05   | 0.05                 | Pass           |                    |      |       |  |
| Method Blank         U         I         I         I           Perfurozalyt sulfonia acid (PFBs)         ugl.         < 0.01   | N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)   | ug/L                    | < 0.05   | 0.05                 | Pass           |                    |      |       |  |
| Pertfunctional acids (PFSAs)         up         c         im         im <t< td=""><td>Method Blank</td><td></td><td></td><td></td><td></td><td></td></t<>   | Method Blank   |                         |  |                      |                |                    |      |       |  |
| Perflucoschancesuffonic acid (PFES)         ugL         <  | Perfluoroalkyl sulfonic acids (PFSAs)  |                         |  |                      |                |                    |      |       |  |
| Perfluctore         ugl.         < 0.01         0.01         Pass           Perfluctorebaresulfonic add (PFHsS)         ugl.         < 0.01  | Perfluorobutanesulfonic acid (PFBS)  | ug/L                    | < 0.01   | 0.01                 | Pass           |                    |      |       |  |
| Perfunction/exanesultanci acid (PFHs)         ugL         < 0.01         Pass           Perfunctoring resultanci acid (PFDS)         ugL         < 0.01  | Perfluoropentanesulfonic acid (PFPeS)  | ug/L                    | < 0.01   | 0.01                 | Pass           |                    |      |       |  |
| Perfusionce add (PFHpS)         upL         < 0.01         Pass           Perfusion cald (PFDS)         upL         < 0.01   | Perfluorohexanesulfonic acid (PFHxS)   | ug/L                    | < 0.01   | 0.01                 | Pass           |                    |      |       |  |
| Perfluoroctanesulfonic acid (PFOS)         ugL         < 0.01         Pass           Method Blank         .         0.01         Pass           n2 Fluorotelomer sulfonic acids (n:2 FTSA)         ugL         < 0.01  | Perfluoroheptanesulfonic acid (PFHpS)  | ug/L                    | < 0.01   | 0.01                 | Pass           |                    |      |       |  |
| Perfunctordecanesulation add (PEDS)         ugl.         < < 0.01         Pass           Method Blank  | Perfluorooctanesulfonic acid (PFOS)  | ug/L                    | < 0.01   | 0.01                 | Pass           |                    |      |       |  |
| Method Blank         view  | Perfluorodecanesulfonic acid (PFDS)  | ug/L                    | < 0.01   | 0.01                 | Pass           |                    |      |       |  |
| n.2 Flucorotelomer sulfonic acids (n.2 FTSAs)         uglL         <   | Method Blank   |                         |  | <br>-                |                |                    |      |       |  |
| 1H.1H.2H.2H.perfluronekanesulfonic acid (4:2 FTSA)     ug/L     < 0.01   | n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)   |                         |  |                      |                |                    |      |       |  |
| 1H.14.24.24.perfluorodcanesulfonic acid (62 FTSA)         ugL         < 0.01   | 1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)  | ug/L                    | < 0.01   | 0.01                 | Pass           |                    |      |       |  |
| 1H.14.24.24-perfluorodecanesulfonic acid (10.2 FTSA)     ugl     < 0.01  | 1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)  | ug/L                    | < 0.05   | 0.05                 | Pass           |                    |      |       |  |
| 1H.14.24.24.pertlucondodecanesultonic acid (10:2 FTSA)ug/L< 0.01PassMethodMethod BiankIIIIIIIHeavy Metalsmg/L< 0.0001PassIIIIIIICadmium (littered)mg/L< 0.0001PassIII <t< td=""><td>1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)</td><td>ug/L</td><td>&lt; 0.01</td><td>0.01</td><td>Pass</td><td></td></t<>  | 1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)  | ug/L                    | < 0.01   | 0.01                 | Pass           |                    |      |       |  |
| Metalogical colspan="2">Metalogical colspan="2"Metalogical colspan="2"Metalogical colspan="2"Metalogical colspan="2"Metalogical colspan="2"Metalogical colspan="2" <th <="" colspan="2" t<="" td=""><td>1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)</td><td>ug/L</td><td>&lt; 0.01</td><td>0.01</td><td>Pass</td><td></td></th>   | <td>1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)</td> <td>ug/L</td> <td>&lt; 0.01</td> <td>0.01</td> <td>Pass</td> <td></td>   |                         | 1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA) | ug/L                 | < 0.01         | 0.01               | Pass |       |  |
| Heavy Metalsmg/l< 0.001MMMArsenic (filtered)mg/l< 0.001  | Method Blank   |                         |  |                      |                |                    |      |       |  |
| Arsenic (ilitered)         mg/L         < 0.001         Pass         Pass           Cadmium (ilitered)         mg/L         < 0.001  | Heavy Metals   |                         |  |                      |                |                    |      |       |  |
| Cadmium (filtered)         mg/L         < 0.0002         Pass           Chromium (filtered)         mg/L         < 0.001   | Arsenic (filtered)   | mg/L                    | < 0.001  | 0.001                | Pass           |                    |      |       |  |
| Chromium (filtered)         mg/L         < 0.001         Pass           Copper (filtered)         mg/L         < 0.001   | Cadmium (filtered)   | mg/L                    | < 0.0002   | 0.0002               | Pass           |                    |      |       |  |
| Copper (filtered)         mg/L         < 0.001         Pass           Lead (filtered)         mg/L         < 0.001   | Chromium (filtered)  | mg/L                    | < 0.001  | 0.001                | Pass           |                    |      |       |  |
| Lead (filtered)         mg/L         < 0.001         Pass           Mercury (filtered)         mg/L         < 0.001  | Copper (filtered)  | mg/L                    | < 0.001  | 0.001                | Pass           |                    |      |       |  |
| Mercury (filtered)         mg/L         < 0.0001         Pass         Incide (filtered)         0.001         Pass           Zinc (filtered)         mg/L         < 0.001  | Lead (filtered)  | mg/L                    | < 0.001  | 0.001                | Pass           |                    |      |       |  |
| Nickel (filtered)         mg/L         < 0.001         Pass         Img/L         < 0.001         Pass           Zinc (filtered)         mg/L         < 0.005  | Mercury (filtered)   | mg/L                    | < 0.0001   | 0.0001               | Pass           |                    |      |       |  |
| Zinc (filtered)         mg/L         < 0.005         Pass         ILCS           LCS - % Recovery  | Nickel (filtered)  | mg/L                    | < 0.001  | 0.001                | Pass           |                    |      |       |  |
| LCS - % Recovery         Image: Control of the system        | Zinc (filtered)  | ma/L                    | < 0.005  | 0.005                | Pass           |                    |      |       |  |
| Total Recoverable Hydrocarbons - 1999 NEPM Fractions         Image of the second s       | LCS - % Recovery   | <u> </u>                |  |                      |                |                    |      |       |  |
| TRH C6-C9         %         90         70-130         Pass           TRH C10-C14         %         110         70-130         Pass           LCS - % Recovery         70-130         Pass         70-130         Pass           Volatile Organics          1         70-130         Pass         1           1.1-Dichloroethene         %         107         70-130         Pass         1           1.1.1-Trichloroethane         %         93         70-130         Pass         1           1.2-Dichloroethane         %         96         70-130         Pass         1           Benzene         %         96         70-130         Pass         1           o-Xylene         %         100         70-130         Pass         1           o-Xylene         %         89         70-130         Pass         1           Toluene         %         88  | Total Recoverable Hydrocarbons - 1999 NEPM Fractions   |                         |  |                      |                |                    |      |       |  |
| TRH C10-C14       %       110       70-130       Pass         LCS - % Recovery       70-130       Pass       70-130       Pass         Volatile Organics       70-130       Pass       70-130       Pass         1.1-Dichloroethane       %       107       70-130       Pass       70-130       Pass         1.1.1-Trichloroethane       %       93       70-130       Pass       70-130       Pass         1.2-Dichloroethane       %       96       96       70-130       Pass       70-130       Pass         Ethylbenzene       %       100       70-130       Pass       70-130       Pass         Oxylene       %       100       70-130       Pass       70-130       Pass         Toluene       %       89       70-130       Pass       70-130       Pass         Trichloroethene       %       88       70-130 <td>TRH C6-C9</td> <td>%</td> <td>90</td> <td>70-130</td> <td>Pass</td> <td></td>  | TRH C6-C9  | %                       | 90   | 70-130               | Pass           |                    |      |       |  |
| LCS - % Recovery         Volatile Organics         Image: Constraint of the second seco                | TRH C10-C14  | %                       | 110  | 70-130               | Pass           |                    |      |       |  |
| Volatile Organics         Image: Constraint of the second sec       | LCS - % Recovery   |                         |  |                      |                |                    |      |       |  |
| 1.1-Dichloroethene         %         107         70-130         Pass           1.1.1-Trichloroethane         %         93         70-130         Pass           1.2-Dichloroethane         %         102         70-130         Pass           1.2-Dichloroethane         %         96         70-130         Pass           1.2-Dichloroethane         %         96         70-130         Pass           Benzene         %         94         70-130         Pass           Ethylbenzene         %         104         70-130         Pass           m&p-Xylenes         %         100         70-130         Pass           o-Xylene         %         97         70-130         Pass           Trichloroethene         %         89         70-130         Pass           Trichloroethene         %         89         70-130         Pass           Xylenes - Total         %         99         70-130         Pass           Xylenes - Total         %         99         70-130         Pass           LCS - % Recovery          70-130         Pass            Naphthalene         %         102         70-130         Pass  | Volatile Organics  |                         |  |                      |                |                    |      |       |  |
| 1.1.1-Trichloroethane       %       93       70.130       Pass         1.2-Dichloroethane       %       102       70.130       Pass         1.2-Dichloroethane       %       96       70.130       Pass         Benzene       %       94       70.130       Pass         Ethylbenzene       %       94       70.130       Pass         m&p-Xylenes       %       104       70.130       Pass         o-Xylene       %       97       70.130       Pass         o-Xylene       %       97       70.130       Pass         Toluene       %       89       70.130       Pass         Trichloroethene       %       88       70.130       Pass         Xylenes - Total       %       88       70.130       Pass         LCS - % Recovery       70.130       Pass       20.20         TRH C6C-10       %       90       70.130       Pass         TRH > C10-C16       %       102       70.130       Pass         LCS - % Recovery       70.130       Pass       20.20         LCS - % Recovery       70.130       Pass       20.20         LCS - % Recovery       %       11   | 1.1-Dichloroethene   | %                       | 107  | 70-130               | Pass           |                    |      |       |  |
| 1.2-Dichlorobenzene         %         102         70-130         Pass           1.2-Dichlorobenzene         %         96         70-130         Pass           1.2-Dichloroethane         %         94         70-130         Pass           Benzene         %         94         70-130         Pass           Ethylbenzene         %         104         70-130         Pass           m&p-Xylenes         %         100         70-130         Pass           o-Xylene         %         97         70-130         Pass           o-Xylene         %         97         70-130         Pass           Toluene         %         89         70-130         Pass           Trichloroethene         %         88         70-130         Pass           Xylenes - Total         %         99         70-130         Pass           LCS - % Recovery         V         70-130         Pass         Mash           Naphthalene         %         102         70-130         Pass           TRH C6C-C10         %         102         70-130         Pass           LCS - % Recovery         V         70-130         Pass         Mass  | 1.1.1-Trichloroethane  | %                       | 93   | 70-130               | Pass           |                    |      |       |  |
| 1.2-Dichloroethane       %       96       70-130       Pass         Benzene       %       94       70-130       Pass         Ethylbenzene       %       104       70-130       Pass         m&p-Xylenes       %       100       70-130       Pass         o-Xylene       %       97       70-130       Pass         Toluene       %       89       70-130       Pass         Toluene       %       89       70-130       Pass         Trichloroethene       %       88       70-130       Pass         Xylenes - Total       %       99       70-130       Pass         LCS - % Recovery   | 1.2-Dichlorobenzene  | %                       | 102  | 70-130               | Pass           |                    |      |       |  |
| Benzene         %         94         70-130         Pass           Ethylbenzene         %         104         70-130         Pass            m&p-Xylenes         %         100         70-130         Pass            o-Xylene         %         97         70-130         Pass            o-Xylene         %         97         70-130         Pass            Toluene         %         89         70-130         Pass            Trichloroethene         %         88         70-130         Pass            Xylenes - Total         %         99         70-130         Pass            LCS - % Recovery         %         99         70-130         Pass            Total Recoverable Hydrocarbons - 2013 NEPM Fractions         Image: Mass         I  | 1.2-Dichloroethane   | %                       | 96   | 70-130               | Pass           |                    |      |       |  |
| Ethylbenzene         %         104         70-130         Pass           m&p-Xylenes         %         100         70-130         Pass            o-Xylene         %         97         70-130         Pass            Toluene         %         89         70-130         Pass            Trichloroethene         %         89         70-130         Pass            Xylenes - Total         %         99         70-130         Pass            Xylenes - Total         %         99         70-130         Pass <b>LCS - % Recovery</b> Total Recoverable Hydrocarbons - 2013 NEPM Fractions         No         70-130         Pass           Naphthalene         %         102         70-130         Pass            TRH C6-C10         %         90         70-130         Pass            TRH > C10-C16         %         119         70-130         Pass            LCS - % Recovery         V         Y         Y         Y         Y           Polycyclic Aromatic Hydrocarbons         %         75         70-130         Pass            Acenaphth   | Benzene  | %                       | 94   | 70-130               | Pass           |                    |      |       |  |
| m&p-Xylenes         %         100         70-130         Pass           o-Xylene         %         97         70-130         Pass           Toluene         %         97         70-130         Pass           Trichloroethene         %         89         70-130         Pass           Xylenes - Total         %         88         70-130         Pass           LCS - % Recovery         %         99         70-130         Pass           Total Recoverable Hydrocarbons - 2013 NEPM Fractions         %         99         70-130         Pass           Naphthalene         %         102         70-130         Pass            Naphthalene         %         102         70-130         Pass           TRH C6-C10         %         90         70-130         Pass           TRH > C10-C16         %         119         70-130         Pass           LCS - % Recovery          70-130         Pass            Polycyclic Aromatic Hydrocarbons         %         119         70-130         Pass           Acenaphthene         %         75         70-130         Pass           Acenaphthylene         %         79  | Ethylbenzene   | %                       | 104  | 70-130               | Pass           |                    |      |       |  |
| o-Xylene         %         97         70-130         Pass           Toluene         %         89         70-130         Pass           Trichloroethene         %         89         70-130         Pass           Xylenes - Total         %         88         70-130         Pass           LCS - % Recovery         %         99         70-130         Pass           Total Recoverable Hydrocarbons - 2013 NEPM Fractions            Pass           Naphthalene         %         102         70-130         Pass           TRH C6-C10         %         90         70-130         Pass           LCS - % Recovery         %         102         70-130         Pass           TRH C6-C10         %         90         70-130         Pass           TRH >C10-C16         %         119         70-130         Pass           LCS - % Recovery                Polycyclic Aromatic Hydrocarbons         %         119         70-130         Pass           Acenaphthene         %         75         70-130         Pass           Acenaphthylene         %         79         70-130  | m&p-Xylenes  | %                       | 100  | 70-130               | Pass           |                    |      |       |  |
| Toluene         %         89         70-130         Pass           Trichloroethene         %         89         70-130         Pass           Xylenes - Total         %         88         70-130         Pass           Xylenes - Total         %         99         70-130         Pass           LCS - % Recovery         %         99         70-130         Pass           Total Recoverable Hydrocarbons - 2013 NEPM Fractions               Naphthalene         %         102         70-130         Pass            TRH C6-C10         %         90         70-130         Pass            TRH >C10-C16         %         119         70-130         Pass            LCS - % Recovery                 Polycyclic Aromatic Hydrocarbons         %         119         70-130         Pass             Acenaphthene         %         75         70-130         Pass             Acenaphthylene         %         79         70-130         Pass   | o-Xylene   | %                       | 97   | 70-130               | Pass           |                    |      |       |  |
| Notice         No         Pass         Contract         No         Pass         Contract         No         Pass         Contract         No         Pass         Pass         Contract         No         No         Pass         Contract         No   | Toluene  | %                       | 89   | 70-130               | Pass           |                    |      |       |  |
| Xylenes - Total       Xylenes       Total       Xylenes       Total       Yylenes         Xylenes - Total       %       99       70-130       Pass         LCS - % Recovery       Xylenes       Xylenes       Xylenes       Xylenes       Xylenes       Xylenes       Xylenes       Xylenes         Total Recoverable Hydrocarbons - 2013 NEPM Fractions       Xylenes       Xylenes </td <td>Trichloroethene</td> <td>%</td> <td>88</td> <td>70-130</td> <td>Pass</td> <td></td>  | Trichloroethene  | %                       | 88   | 70-130               | Pass           |                    |      |       |  |
| LCS - % Recovery       Image: constraint of the constraint of                | Xylenes - Total  | %                       | 99   | 70-130               | Pass           |                    |      |       |  |
| Total Recoverable Hydrocarbons - 2013 NEPM Fractions         ///         // <th <="" th="">         //         <th <="" th="">         //         <th <="" th=""></th></th></th>  | //         // <th <="" th="">         //         <th <="" th=""></th></th> | // <th <="" th=""></th> |  | LCS - % Recovery     | ,,,            |                    |      | 1 400 |  |
| Naphthalene         %         102         70-130         Pass           TRH C6-C10         %         90         70-130         Pass           TRH >C10-C16         %         119         70-130         Pass           LCS - % Recovery         %         119         70-130         Pass           Polycyclic Aromatic Hydrocarbons         %         75         70-130         Pass           Acenaphthene         %         75         70-130         Pass           Acenaphthylene         %         79         70-130         Pass  | Total Recoverable Hydrocarbons - 2013 NEPM Fractions   |                         |  |                      |                |                    |      |       |  |
| TRH C6-C10       %       90       70-100       Pass         TRH >C10-C16       %       119       70-130       Pass         LCS - % Recovery       V       V       V       V       V         Polycyclic Aromatic Hydrocarbons       %       75       70-130       Pass         Acenaphthylene       %       79       70-130       Pass  | Naphthalene  | %                       | 102  | 70-130               | Pass           |                    |      |       |  |
| No.         CO         No.   | TRH C6-C10   | %                       | 90   | 70-130               | Pass           |                    |      |       |  |
| LCS - % Recovery     Image: Second seco | TRH >C10-C16   | %                       | 119  | 70-130               | Pass           |                    |      |       |  |
| Polycyclic Aromatic HydrocarbonsAcenaphthene%7570-130PassAcenaphthylene%7970-130Pass   | LCS - % Recovery   | 70                      |  |                      | . 400          |                    |      |       |  |
| Acenaphthene%7570-130PassAcenaphthylene%7970-130Pass   | Polycyclic Aromatic Hydrocarbons   |                         |  |                      |                |                    |      |       |  |
| Acenaphthylene         %         79         70-130         Pass  | Acenaphthene   | %                       | 75   | 70-130               | Pass           |                    |      |       |  |
|  | Acenaphthylene   | %                       | 79   | 70-130               | Pass           |                    |      |       |  |
| Anthracene   %   85       70_130   Page  | Anthracene   | %                       | 85   | 70-130               | Pase           |                    |      |       |  |
| Benz(a)anthracene % 87 70-130 Pass   | Benz(a)anthracene  | %                       | 87   | 70-130               | Pass           |                    |      |       |  |



| Test   | Units | Result 1 |     | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|--|-------|----------|-----|----------------------|----------------|--------------------|
| Benzo(a)pyrene   | %     | 89       |     | 70-130               | Pass           |                    |
| Benzo(b&j)fluoranthene                                       | %     | 89       |     | 70-130               | Pass           |                    |
| Benzo(g.h.i)perylene   | %     | 93       |     | 70-130               | Pass           |                    |
| Benzo(k)fluoranthene   | %     | 92       |     | 70-130               | Pass           |                    |
| Chrysene   | %     | 90       |     | 70-130               | Pass           |                    |
| Dibenz(a.h)anthracene  | %     | 85       |     | 70-130               | Pass           |                    |
| Fluoranthene   | %     | 90       |     | 70-130               | Pass           |                    |
| Fluorene   | %     | 79       |     | 70-130               | Pass           |                    |
| Indeno(1.2.3-cd)pyrene                                       | %     | 93       |     | 70-130               | Pass           |                    |
| Naphthalene  | %     | 72       |     | 70-130               | Pass           |                    |
| Phenanthrene   | %     | 84       |     | 70-130               | Pass           |                    |
| Pvrene   | %     | 89       |     | 70-130               | Pass           |                    |
| LCS - % Recovery   |       |          | ь I |                      |                |                    |
| Perfluoroalkyl carboxylic acids (PFCAs)                      |       |          |     |                      |                |                    |
| Perfluorobutanoic acid (PFBA)                                | %     | 108      |     | 50-150               | Pass           |                    |
| Perfluoropentanoic acid (PEPeA)                              | %     | 118      |     | 50-150               | Pass           |                    |
| Perfluoropexanoic acid (PEHxA)                               | %     | 107      |     | 50-150               | Pass           |                    |
| Perfluorohentanoic acid (PEHpA)                              | %     | 128      |     | 50-150               | Pass           |                    |
| Perfluorooctanoic acid (PEOA)                                | %     | 113      |     | 50-150               | Pass           |                    |
| Perfluoroponanoic acid (PENA)                                | %     | 118      |     | 50-150               | Pass           |                    |
| Perfluorodecanoic acid (PEDA)                                | %     | 117      |     | 50-150               | Pass           |                    |
| Perfluoroundecanoic acid (PELInDA)                           | %     | 03       |     | 50-150               | Pass           |                    |
| Perfluorododecanoic acid (PEDoDA)                            | %     | 117      |     | 50-150               | Pass           |                    |
| Perfluorotridecanoic acid (PETrDA)                           |       | 111      |     | 50-150               | Pass           |                    |
| Perfluorotetradecanoic acid (PETeDA)                         |       | 12/      |     | 50-150               | Pass           |                    |
|  | /0    | 124      |     | 30-130               | 1 833          |                    |
| Perfluoroalkyl sulfonamido substances                        |       |          |     |                      |                |                    |
| Perfluorooctane sulfonamide (EOSA)                           | %     | 126      |     | 50-150               | Pass           |                    |
| N-methylperfluoro-1-octane sulfonamide (N-MeEOSA)            | %     | 125      |     | 50-150               | Pass           |                    |
| N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)             | %     | 82       |     | 50-150               | Pass           |                    |
| 2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-       |       |          |     |                      | _              |                    |
| MeFOSE)  | %     | 125      |     | 50-150               | Pass           |                    |
| 2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE) | %     | 122      |     | 50-150               | Pass           |                    |
| N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)    | %     | 113      |     | 50-150               | Pass           |                    |
| N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)   | %     | 72       |     | 50-150               | Pass           |                    |
| LCS - % Recovery   |       | 1        |     |                      |                |                    |
| Perfluoroalkyl sulfonic acids (PFSAs)                        |       |          |     |                      | _              |                    |
| Perfluorobutanesulfonic acid (PFBS)                          | %     | 115      |     | 50-150               | Pass           |                    |
| Perfluoropentanesulfonic acid (PFPeS)                        | %     | 115      |     | 50-150               | Pass           |                    |
| Perfluorohexanesulfonic acid (PFHxS)                         | %     | 105      |     | 50-150               | Pass           |                    |
| Perfluoroheptanesulfonic acid (PFHpS)                        | %     | 118      |     | 50-150               | Pass           |                    |
| Perfluorooctanesulfonic acid (PFOS)                          | %     | 105      |     | 50-150               | Pass           |                    |
| Perfluorodecanesulfonic acid (PFDS)                          | %     | 113      |     | 50-150               | Pass           |                    |
| LCS - % Recovery   |       | 1        |     |                      |                |                    |
| n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)                 |       |          |     |                      |                |                    |
| 1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)          | %     | 121      |     | 50-150               | Pass           |                    |
| 1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)          | %     | 126      |     | 50-150               | Pass           |                    |
| 1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)          | %     | 131      |     | 50-150               | Pass           |                    |
| 1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)       | %     | 124      |     | 50-150               | Pass           |                    |
| LCS - % Recovery   |       |          |     |                      |                |                    |
| Heavy Metals   |       |          |     |                      |                |                    |
| Arsenic (filtered)   | %     | 102      |     | 70-130               | Pass           |                    |
| Cadmium (filtered)   | %     | 102      |     | 70-130               | Pass           |                    |
| Chromium (filtered)  | %     | 101      |     | 70-130               | Pass           |                    |
| Copper (filtered)  | %     | 100      |     | 70-130               | Pass           |                    |



| Test  |               | Units        | Result 1 |          |   | Acceptance<br>Limits | Pass<br>Limits       | Qualifying<br>Code |                    |
|---|---------------|--------------|----------|----------|---|----------------------|----------------------|--------------------|--------------------|
| Lead (filtered)   |               |              | %        | 101      |   |                      | 70-130               | Pass               |                    |
| Mercury (filtered)  |               |              | %        | 101      |   |                      | 70-130               | Pass               |                    |
| Nickel (filtered)   |               |              | %        | 101      |   |                      | 70-130               | Pass               |                    |
| Zinc (filtered)   |               |              | %        | 100      |   |                      | 70-130               | Pass               |                    |
| Test  | Lab Sample ID | QA<br>Source | Units    | Result 1 |   |                      | Acceptance<br>Limits | Pass<br>Limits     | Qualifying<br>Code |
| Spike - % Recovery  |               |              |          |          |   | -                    |                      |                    |                    |
| Perfluoroalkyl carboxylic acids (PF                               | CAs)          |              |          | Result 1 |   |                      |                      |                    |                    |
| Perfluorobutanoic acid (PFBA)                                     | M18-No39789   | NCP          | %        | 107      |   |                      | 50-150               | Pass               |                    |
| Perfluoropentanoic acid (PFPeA)                                   | M18-No39789   | NCP          | %        | 109      |   |                      | 50-150               | Pass               |                    |
| Perfluorohexanoic acid (PFHxA)                                    | M18-No39789   | NCP          | %        | 97       |   |                      | 50-150               | Pass               |                    |
| Perfluoroheptanoic acid (PFHpA)                                   | M18-No39789   | NCP          | %        | 117      |   |                      | 50-150               | Pass               |                    |
| Perfluorooctanoic acid (PFOA)                                     | M18-No39789   | NCP          | %        | 109      |   |                      | 50-150               | Pass               |                    |
| Perfluorononanoic acid (PFNA)                                     | M18-No39789   | NCP          | %        | 118      |   |                      | 50-150               | Pass               |                    |
| Perfluorodecanoic acid (PFDA)                                     | M18-No39789   | NCP          | %        | 109      |   |                      | 50-150               | Pass               |                    |
| Perfluoroundecanoic acid<br>(PFUnDA)                              | M18-No39789   | NCP          | %        | 84       |   |                      | 50-150               | Pass               |                    |
| Perfluorododecanoic acid<br>(PFDoDA)                              | M18-No39789   | NCP          | %        | 113      |   |                      | 50-150               | Pass               |                    |
| Perfluorotridecanoic acid (PFTrDA)                                | M18-No39789   | NCP          | %        | 79       |   |                      | 50-150               | Pass               |                    |
| Perfluorotetradecanoic acid<br>(PFTeDA)                           | M18-No39789   | NCP          | %        | 98       |   |                      | 50-150               | Pass               |                    |
| Spike - % Recovery  |               |              |          |          |   |                      |                      |                    |                    |
| Perfluoroalkyl sulfonamido substa                                 | nces          |              |          | Result 1 |   |                      |                      |                    |                    |
| Perfluorooctane sulfonamide<br>(FOSA)                             | M18-No39789   | NCP          | %        | 113      |   |                      | 50-150               | Pass               |                    |
| N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)                 | M18-No39789   | NCP          | %        | 118      |   |                      | 50-150               | Pass               |                    |
| N-ethylperfluoro-1-octane<br>sulfonamide (N-EtFOSA)               | M18-No39789   | NCP          | %        | 77       |   |                      | 50-150               | Pass               |                    |
| 2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)     | M18-No39789   | NCP          | %        | 136      |   |                      | 50-150               | Pass               |                    |
| 2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)      | M18-No39789   | NCP          | %        | 121      |   |                      | 50-150               | Pass               |                    |
| N-ethyl-<br>perfluorooctanesulfonamidoacetic<br>acid (N-EtFOSAA)  | M18-No39789   | NCP          | %        | 89       |   |                      | 50-150               | Pass               |                    |
| N-methyl-<br>perfluorooctanesulfonamidoacetic<br>acid (N-MeFOSAA) | M18-No39789   | NCP          | %        | 114      |   |                      | 50-150               | Pass               |                    |
| Spike - % Recovery  |               |              |          | -        | - |                      |                      |                    |                    |
| Perfluoroalkyl sulfonic acids (PFS)                               | As)           | 1            |          | Result 1 |   |                      |                      |                    |                    |
| Perfluorobutanesulfonic acid<br>(PFBS)                            | M18-No39789   | NCP          | %        | 101      |   |                      | 50-150               | Pass               |                    |
| Perfluoropentanesulfonic acid<br>(PFPeS)                          | M18-No39789   | NCP          | %        | 113      |   |                      | 50-150               | Pass               |                    |
| Perfluorohexanesulfonic acid<br>(PFHxS)                           | M18-No39789   | NCP          | %        | 107      |   |                      | 50-150               | Pass               |                    |
| Perfluoroheptanesulfonic acid (PFHpS)                             | M18-No39789   | NCP          | %        | 115      |   |                      | 50-150               | Pass               |                    |
| Perfluorooctanesulfonic acid<br>(PFOS)                            | M18-No39789   | NCP          | %        | 85       |   |                      | 50-150               | Pass               |                    |
| Perfluorodecanesulfonic acid (PFDS)                               | M18-No39789   | NCP          | %        | 83       |   |                      | 50-150               | Pass               |                    |
| Spike - % Recovery  |               |              |          |          |   |                      |                      |                    |                    |
| n:2 Fluorotelomer sulfonic acids (r                               | n:2 FTSAs)    |              |          | Result 1 |   |                      |                      |                    |                    |
| 1H.1H.2H.2H-<br>perfluorohexanesulfonic acid (4:2<br>FTSA)        | M18-No39789   | NCP          | %        | 117      |   |                      | 50-150               | Pass               |                    |



| Test  | Lab Sample ID   | QA<br>Source | Units | Result 1     |          |     | Acceptance<br>Limits | Pass<br>Limits | Qualifying<br>Code |
|---|-----------------|--------------|-------|--------------|----------|-----|----------------------|----------------|--------------------|
| 1H.1H.2H.2H-                                  |                 |              |       |              |          |     |                      |                |                    |
| FTSA)   | M18-No39789     | NCP          | %     | 122          |          |     | 50-150               | Pass           |                    |
| 1H.1H.2H.2H-                                  |                 |              |       |              |          |     |                      |                |                    |
| perfluorodecanesulfonic acid (8:2<br>FTSA)    | M18-No39789     | NCP          | %     | 142          |          |     | 50-150               | Pass           |                    |
| 1H.1H.2H.2H-                                  |                 |              |       |              |          |     |                      |                |                    |
| perfluorododecanesulfonic acid<br>(10:2 FTSA) | M18-No39789     | NCP          | %     | 123          |          |     | 50-150               | Pass           |                    |
| Spike - % Recovery                            |                 |              |       |              | I        |     |                      |                |                    |
| Heavy Metals                                  |                 |              |       | Result 1     |          |     |                      |                |                    |
| Mercury (filtered)                            | M18-No28785     | NCP          | %     | 97           |          |     | 70-130               | Pass           |                    |
| Spike - % Recovery                            |                 |              |       | -            |          |     |                      |                |                    |
| Total Recoverable Hydrocarbons -              | 1999 NEPM Fract | ions         |       | Result 1     |          |     |                      |                |                    |
| TRH C6-C9                                     | S18-No34065     | CP           | %     | 83           |          |     | 70-130               | Pass           |                    |
| Spike - % Recovery                            |                 |              |       | I            | I        |     | 1                    |                |                    |
| Volatile Organics                             | 1               |              |       | Result 1     |          |     |                      |                |                    |
| Benzene                                       | S18-No34065     | CP           | %     | 84           |          |     | 70-130               | Pass           |                    |
| Ethylbenzene                                  | S18-No34065     | CP           | %     | 82           |          |     | 70-130               | Pass           |                    |
| m&p-Xylenes                                   | S18-No34065     | CP           | %     | 83           |          |     | 70-130               | Pass           |                    |
| o-Xylene                                      | S18-No34065     | CP           | %     | 83           |          |     | 70-130               | Pass           |                    |
| Toluene                                       | S18-No34065     | CP           | %     | 81           |          |     | 70-130               | Pass           |                    |
| Xylenes - Total                               | S18-No34065     | CP           | %     | 83           |          |     | 70-130               | Pass           |                    |
| Spike - % Recovery                            |                 |              |       | <b>D 1 1</b> |          |     |                      |                |                    |
| Total Recoverable Hydrocarbons -              | 2013 NEPM Fract | ions         | 0/    | Result 1     |          |     | 70.400               | _              |                    |
|   | S18-N034065     |              | %     | 73           |          |     | 70-130               | Pass           |                    |
| Spike % Percycery                             | 518-N034065     |              | %     | 81           |          |     | 70-130               | Pass           |                    |
| Spike - % Recovery                            |                 |              |       | Result 1     |          |     |                      |                |                    |
| Arsenic (filtered)                            | S18-No34066     | CP           | %     | 103          |          |     | 70-130               | Pass           |                    |
| Cadmium (filtered)                            | S18-No34066     | CP           | %     | 103          |          |     | 70-130               | Pass           |                    |
| Chromium (filtered)                           | S18-No34066     | CP           | %     | 104          |          |     | 70-130               | Pass           |                    |
| Copper (filtered)                             | S18-No34066     | CP           | %     | 101          |          |     | 70-130               | Pass           |                    |
| Lead (filtered)                               | S18-No34066     | CP           | %     | 95           |          |     | 70-130               | Pass           |                    |
| Nickel (filtered)                             | S18-No34066     | CP           | %     | 100          |          |     | 70-130               | Pass           |                    |
| Zinc (filtered)                               | S18-No34066     | CP           | %     | 99           |          |     | 70-130               | Pass           |                    |
| Test  | Lab Sample ID   | QA<br>Source | Units | Result 1     |          |     | Acceptance           | Pass<br>Limits | Qualifying         |
| Duplicate                                     |                 |              |       | <u> </u>     |          |     |                      |                |                    |
| Perfluoroalkyl carboxylic acids (PF           | -CAs)           |              |       | Result 1     | Result 2 | RPD |                      |                |                    |
| Perfluorobutanoic acid (PFBA)                 | B18-No35802     | NCP          | ug/L  | < 0.05       | < 0.05   | <1  | 30%                  | Pass           |                    |
| Perfluoropentanoic acid (PFPeA)               | B18-No35802     | NCP          | ug/L  | < 0.01       | < 0.01   | <1  | 30%                  | Pass           |                    |
| Perfluorohexanoic acid (PFHxA)                | B18-No35802     | NCP          | ug/L  | < 0.01       | < 0.01   | <1  | 30%                  | Pass           |                    |
| Perfluoroheptanoic acid (PFHpA)               | B18-No35802     | NCP          | ug/L  | < 0.01       | < 0.01   | <1  | 30%                  | Pass           |                    |
| Perfluorooctanoic acid (PFOA)                 | B18-No35802     | NCP          | ug/L  | < 0.01       | < 0.01   | <1  | 30%                  | Pass           |                    |
| Perfluorononanoic acid (PFNA)                 | B18-No35802     | NCP          | ug/L  | < 0.01       | < 0.01   | <1  | 30%                  | Pass           |                    |
| Perfluorodecanoic acid (PFDA)                 | B18-No35802     | NCP          | ug/L  | < 0.01       | < 0.01   | <1  | 30%                  | Pass           |                    |
| Perfluoroundecanoic acid<br>(PFUnDA)          | B18-No35802     | NCP          | ug/L  | < 0.01       | < 0.01   | <1  | 30%                  | Pass           |                    |
| Perfluorododecanoic acid<br>(PFDoDA)          | B18-No35802     | NCP          | ua/L  | < 0.01       | < 0.01   | <1  | 30%                  | Pass           |                    |
| Perfluorotridecanoic acid (PFTrDA)            | B18-No35802     | NCP          | uq/L  | < 0.01       | < 0.01   | <1  | 30%                  | Pass           |                    |
| Perfluorotetradecanoic acid<br>(PFTeDA)       | B18-No35802     | NCP          | ug/L  | < 0.01       | < 0.01   | <1  | 30%                  | Pass           |                    |



| Duplicate   |             |     |      |          |          |     |     |      |  |
|---|-------------|-----|------|----------|----------|-----|-----|------|--|
| Perfluoroalkyl sulfonamido substa                                 | nces        | _   |      | Result 1 | Result 2 | RPD |     |      |  |
| Perfluorooctane sulfonamide<br>(FOSA)                             | B18-No35802 | NCP | ug/L | < 0.05   | < 0.05   | <1  | 30% | Pass |  |
| N-methylperfluoro-1-octane<br>sulfonamide (N-MeFOSA)              | B18-No35802 | NCP | ug/L | < 0.05   | < 0.05   | <1  | 30% | Pass |  |
| N-ethylperfluoro-1-octane<br>sulfonamide (N-EtFOSA)               | B18-No35802 | NCP | ug/L | < 0.05   | < 0.05   | <1  | 30% | Pass |  |
| 2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)     | B18-No35802 | NCP | ug/L | < 0.05   | < 0.05   | <1  | 30% | Pass |  |
| 2-(N-ethylperfluoro-1-octane<br>sulfonamido)-ethanol (N-EtFOSE)   | B18-No35802 | NCP | ug/L | < 0.05   | < 0.05   | <1  | 30% | Pass |  |
| N-ethyl-<br>perfluorooctanesulfonamidoacetic<br>acid (N-EtFOSAA)  | B18-No35802 | NCP | ug/L | < 0.05   | < 0.05   | <1  | 30% | Pass |  |
| N-methyl-<br>perfluorooctanesulfonamidoacetic<br>acid (N-MeFOSAA) | B18-No35802 | NCP | ug/L | < 0.05   | < 0.05   | <1  | 30% | Pass |  |
| Duplicate   |             |     |      | 1        |          |     |     |      |  |
| Perfluoroalkyl sulfonic acids (PFSA                               | As)         |     |      | Result 1 | Result 2 | RPD |     |      |  |
| Perfluorobutanesulfonic acid<br>(PFBS)                            | B18-No35802 | NCP | ug/L | < 0.01   | < 0.01   | <1  | 30% | Pass |  |
| Perfluoropentanesulfonic acid<br>(PFPeS)                          | B18-No35802 | NCP | ug/L | < 0.01   | < 0.01   | <1  | 30% | Pass |  |
| Perfluorohexanesulfonic acid<br>(PFHxS)                           | B18-No35802 | NCP | ug/L | < 0.01   | < 0.01   | <1  | 30% | Pass |  |
| Perfluoroheptanesulfonic acid<br>(PFHpS)                          | B18-No35802 | NCP | ug/L | < 0.01   | < 0.01   | <1  | 30% | Pass |  |
| Perfluorooctanesulfonic acid (PFOS)                               | B18-No35802 | NCP | ug/L | < 0.01   | < 0.01   | <1  | 30% | Pass |  |
| Perfluorodecanesulfonic acid<br>(PFDS)                            | B18-No35802 | NCP | ug/L | < 0.01   | < 0.01   | <1  | 30% | Pass |  |
| Duplicate   |             |     |      | 1        |          |     |     |      |  |
| n:2 Fluorotelomer sulfonic acids (n                               | :2 FTSAs)   |     |      | Result 1 | Result 2 | RPD |     |      |  |
| 1H.1H.2H.2H-<br>perfluorohexanesulfonic acid (4:2<br>FTSA)        | B18-No35802 | NCP | ug/L | < 0.01   | < 0.01   | <1  | 30% | Pass |  |
| 1H.1H.2H.2H-<br>perfluorooctanesulfonic acid (6:2<br>FTSA)        | B18-No35802 | NCP | ug/L | < 0.05   | < 0.05   | <1  | 30% | Pass |  |
| 1H.1H.2H.2H-<br>perfluorodecanesulfonic acid (8:2<br>FTSA)        | B18-No35802 | NCP | ug/L | < 0.01   | < 0.01   | <1  | 30% | Pass |  |
| 1H.1H.2H.2H-<br>perfluorododecanesulfonic acid<br>(10:2 FTSA)     | B18-No35802 | NCP | ug/L | < 0.01   | < 0.01   | <1  | 30% | Pass |  |
| Duplicate   |             |     |      |          |          |     |     |      |  |
| Heavy Metals  |             |     |      | Result 1 | Result 2 | RPD |     |      |  |
| Chromium (filtered)   | S18-No34063 | CP  | mg/L | 0.002    | 0.002    | 1.0 | 30% | Pass |  |
| Copper (filtered)   | S18-No34063 | CP  | mg/L | 0.002    | 0.002    | 12  | 30% | Pass |  |
| Lead (filtered)   | M18-No28784 | NCP | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |  |
| Mercury (filtered)  | S18-No34063 | CP  | mg/L | < 0.0001 | < 0.0001 | <1  | 30% | Pass |  |
| Nickel (filtered)   | S18-No34063 | CP  | mg/L | < 0.001  | < 0.001  | <1  | 30% | Pass |  |
| Zinc (filtered)   | S18-No34063 | CP  | mg/L | < 0.005  | < 0.005  | <1  | 30% | Pass |  |



#### Comments

Eurofins | mgt accreditation number 1261, corporate site 1254 is currently in progress of a controlled transition to a new custom built location at 6 Monterey Road, Dandenong South, Victoria 3175. All results on this report denoted as being performed by Eurofins | mgt 2-5 Kingston Town Close, Oakleigh Victoria 3166 corporate site 1254, will have been performed on either Oakleigh or new Dandenong South site.

| Sample Integrity  |     |
|---|-----|
| Custody Seals Intact (if used)  | N/A |
| Attempt to Chill was evident  | Yes |
| Sample correctly preserved  | Yes |
| Appropriate sample containers have been used                            | Yes |
| Sample containers for volatile analysis received with minimal headspace | Yes |
| Samples received within HoldingTime                                     | Yes |
| Some samples have been subcontracted                                    | No  |

### **Qualifier Codes/Comments**

Code Description

F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).

Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.

F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

N07 Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

 N09
 Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.

 Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogue analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.

Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

#### Authorised By

| Nibha Vaidya     | Analytical Services Manager  |
|------------------|------------------------------|
| Andrew Sullivan  | Senior Analyst-Organic (NSW) |
| Gabriele Cordero | Senior Analyst-Metal (NSW)   |
| Jonathon Angell  | Senior Analyst-Organic (QLD) |

Glenn Jackson General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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| (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)   | contact Parsoni     Ben Withnall       allephone Number:     9495 5158       Utermative Contact:     Joel Griffiths       élephone Number:     9495 7873       élephone Number:     9496 7873       Bampler:     Joel Griffiths       Sampler:     Joel Griffiths       Contact Versults     and anvoice):       Bampler:     Joel Griffiths       Contact Versults     and anvoice):       Bampler:     Sample Information  |                      |                          |   |                         |                      |                             |   |
|---|--|----------------------|--------------------------|---|-------------------------|----------------------|-----------------------------|---|
| Networks:         Solid         Description         Descriprescription <thdescription< th=""></thdescription<>  | alephone Number: 8495 8188<br>Uternative Cowact: Joel Griffiths<br>elephone Number: 9496 7873<br>sempler: Joel Griffiths<br>fempler:                     | Pro                      | lect Name:                                      | Kyeemagh Infants School |                      |                             |   |
| Monte State         State         Monte   | Alternative Contact: Joel Griffiths<br>Telephone Number: 9496 7873<br>Sampler: Joel Griffiths<br>Email Address (results and invoice): ben.withnall@cardno.com.au:ioel.artifiths@cardno.com.<br>Email Address: Level 9+ The Fonan, 203 Pacific Highway, SLeonards, New South Wales 2065<br>Sample Information   |                      | Pro                      | ject Number:                                    | 80616157                |                      | C                           |   |
|   | Telephone Number: 9496 7873<br>Sampler: Joel Griffiths<br>Email Address (results and invoice): <u>ben.withnall@cardno.com.au.ioel.unffiths@cardno.com</u> .<br>Address: Level 9 - The Fonan, 203 Pacific Highway, St Leonards, New South Wales 2065<br>Sample Information  |                      | 2                        | No.:  |                         |                      |                             |   |
|   | Sampler: Joel Griffiths<br>Email Address (results and invoice): ben.withnall@cardno.com.au.joel.ariffiths@cardno.com.<br>Address: Level 9 - The Fonan. 203 Pacific Highway, St Leonards. New South Wales 2065<br>Sample Information  |                      | Pro                      | ect Specific Quote No. :                        | 181029CAR_1             |                      |                             |   |
| Middle direction         Second direction         Second direction         Second direction         Derivation         Derivation<  | Email Address (results and invoice): ben.withnall@cardno.com.au.joel.grift(his@cardno.com.<br>Address: Level 9 - The Fonen, 203 Pacific Highway, Si Leonards, New South Wales 2065<br>Sample Information   |                      | Det                      | e results required:                             | Standard TAT            |                      |                             |   |
| Motion Late of the Contract (Name)         Motion Cont   | Address: Level 9 - The Fonan. 203 Pacific Highway, St Leonards, New South Wales 2065<br>Sampte Information   | iths@cardno.com.au   | Rep                      | ort format:                                     | Electronic              |                      |                             |   |
| Carden Strender         Advantation         Contrainer         Contrainer <th colspa<="" td=""><td>Samptie Information</td><td></td><td></td><td></td><td></td><td></td><td>)</td></th>  | <td>Samptie Information</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>)</td>  | Samptie Information  |                          |   |                         |                      |                             | ) |
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| MM0.         5         De         23110018         Water         X         X         X         N         N           0.000         6         00         23110018         Water         X         X         X         N         <  | Cardno Sample ID Leboratory Sample ID No. Containers Preservation Sample   | n<br>Date<br>sampled | Real Har voc. Pah Metale | (8)<br>85 PFAS including<br>81 05/0FG SOTQ/AOTQ |                         |                      |                             |   |
| WM03         5         Ice         2311/2018         Water         X  | MW01 5 10 23/11/201  | 23/11/2018           | Water                    | ×   |                         |                      |                             |   |
| 0003         0  | MW02 5 10 23/11/201  | 23/11/2018           | Water                    | < ×   |                         |                      |                             |   |
| 0100         5         100         2311/2301         Witten         X   | MW03 5 100 23(11)00  | 23/11/2018           | Water                    | ~ ~   |                         |                      |                             |   |
| 0.0300         5         1ca         237112016         Weller         X         X         X         N         Peases send to ALS           1  | 0A100 5 Ice 23/11/201  | 23/11/2018           | Water                    | < ×   |                         |                      |                             |   |
| interview     inter   | 0A200 5 Ice 23/11/201  | 23/11/2018           | Water                    | ×   |                         |                      | Planea sound to AI S        |   |
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Melbourne 3-5 Kingston Town Close Oakleigh Vic 3166 Phone : +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271

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ABN - 50 005 085 521 e.mail : EnviroSales@eurofins.com

# Sample Receipt Advice

Company name: Cardno (NSW/ACT) Pty Ltd Contact name: **Ben Withnall KYEEMAGH INFANTS SCHOOL** Project name: Project ID: 80818157 COC number: Not provided Turn around time: 5 Day Nov 23, 2018 5:43 PM Date/Time received: Eurofins | mgt reference: 629653

# Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Split sample sent to requested external lab.
- Some samples have been subcontracted.

N/A Custody Seals intact (if used).

# Notes

# QA200 forwarded to ALS

# **Contact notes**

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Ben Withnall - ben.withnall@cardno.com.au.

Note: A copy of these results will also be delivered to the general Cardno (NSW/ACT) Pty Ltd email address.



Environmental Laboratory Air Analysis Water Analysis Soil Contamination Analysis

NATA Accreditation Stack Emission Sampling & Analysis Trade Waste Sampling & Analysis Groundwater Sampling & Analysis



38 Years of Environmental Analysis & Experience



# **CERTIFICATE OF ANALYSIS**

| Work Order              | ES1835239                               | Page                    | : 1 of 9  |
|-------------------------|---|-------------------------|---|
| Client                  | : CARDNO (NSW/ACT) PTY LTD              | Laboratory              | Environmental Division Sydney                         |
| Contact                 | : MR BEN WITHNALL                       | Contact                 | : Customer Services ES                                |
| Address                 | : Level 9 The Forum 203 Pacific Highway | Address                 | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
|                         | St Leonards NSW 2065                    |                         |   |
| Telephone               | : +61 2 9495 8188                       | Telephone               | : +61-2-8784 8555                                     |
| Project                 | : KYEEMAGH INFANTS SCHOOL 80818157      | Date Samples Received   | : 26-Nov-2018 14:55                                   |
| Order number            | :                                       | Date Analysis Commenced | : 27-Nov-2018   |
| C-O-C number            | :                                       | Issue Date              | : 03-Dec-2018 10:39                                   |
| Sampler                 | : JOEL GRIFFITHS                        |                         | Hac-MRA NATA  |
| Site                    |   |                         |   |
| Quote number            | : EN/222 - Secondary Work               |                         | Apprediction No. 835                                  |
| No. of samples received | : 1                                     |                         | Accredited for compliance with                        |
| No. of samples analysed | : 1                                     |                         | ISO/IEC 17025 - Testing                               |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

# Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| Signatories      | Position              | Accreditation Category             |
|------------------|-----------------------|------------------------------------|
| Celine Conceicao | Senior Spectroscopist | Sydney Inorganics, Smithfield, NSW |
| Edwandy Fadjar   | Organic Coordinator   | Sydney Organics, Smithfield, NSW   |
| Franco Lentini   |                       | Sydney Organics, Smithfield, NSW   |



### **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key: CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



| Sub-Matrix: WATER<br>(Matrix: WATER) | Client sample ID |              |                | QA200             | <br> | <br> |
|--------------------------------------|------------------|--------------|----------------|-------------------|------|------|
|                                      | Cl               | ient samplir | ng date / time | 23-Nov-2018 00:00 | <br> | <br> |
| Compound                             | CAS Number       | LOR          | Unit           | ES1835239-001     | <br> | <br> |
|                                      |                  |              |                | Result            | <br> | <br> |
| EG020F: Dissolved Metals by ICP-MS   |                  |              |                |                   |      |      |
| Arsenic                              | 7440-38-2        | 0.001        | mg/L           | <0.001            | <br> | <br> |
| Cadmium                              | 7440-43-9        | 0.0001       | mg/L           | <0.0001           | <br> | <br> |
| Chromium                             | 7440-47-3        | 0.001        | mg/L           | <0.001            | <br> | <br> |
| Copper                               | 7440-50-8        | 0.001        | mg/L           | 0.001             | <br> | <br> |
| Lead                                 | 7439-92-1        | 0.001        | mg/L           | <0.001            | <br> | <br> |
| Nickel                               | 7440-02-0        | 0.001        | mg/L           | 0.001             | <br> | <br> |
| Zinc                                 | 7440-66-6        | 0.005        | mg/L           | <0.005            | <br> | <br> |
| EG035F: Dissolved Mercury by FIMS    |                  |              |                |                   |      |      |
| Mercury                              | 7439-97-6        | 0.0001       | mg/L           | <0.0001           | <br> | <br> |
| EP074A: Monocyclic Aromatic Hydroca  | rbons            |              |                |                   |      |      |
| Styrene                              | 100-42-5         | 5            | µg/L           | <5                | <br> | <br> |
| Isopropylbenzene                     | 98-82-8          | 5            | µg/L           | <5                | <br> | <br> |
| n-Propylbenzene                      | 103-65-1         | 5            | µg/L           | <5                | <br> | <br> |
| 1.3.5-Trimethylbenzene               | 108-67-8         | 5            | µg/L           | <5                | <br> | <br> |
| sec-Butylbenzene                     | 135-98-8         | 5            | µg/L           | <5                | <br> | <br> |
| 1.2.4-Trimethylbenzene               | 95-63-6          | 5            | µg/L           | <5                | <br> | <br> |
| tert-Butylbenzene                    | 98-06-6          | 5            | µg/L           | <5                | <br> | <br> |
| p-Isopropyltoluene                   | 99-87-6          | 5            | µg/L           | <5                | <br> | <br> |
| n-Butylbenzene                       | 104-51-8         | 5            | µg/L           | <5                | <br> | <br> |
| EP074B: Oxygenated Compounds         |                  |              |                |                   |      |      |
| Vinyl Acetate                        | 108-05-4         | 50           | µg/L           | <50               | <br> | <br> |
| 2-Butanone (MEK)                     | 78-93-3          | 50           | µg/L           | <50               | <br> | <br> |
| 4-Methyl-2-pentanone (MIBK)          | 108-10-1         | 50           | µg/L           | <50               | <br> | <br> |
| 2-Hexanone (MBK)                     | 591-78-6         | 50           | µg/L           | <50               | <br> | <br> |
| EP074C: Sulfonated Compounds         |                  |              |                |                   |      |      |
| Carbon disulfide                     | 75-15-0          | 5            | µg/L           | <5                | <br> | <br> |
| EP074D: Fumigants                    |                  |              |                |                   |      |      |
| 2.2-Dichloropropane                  | 594-20-7         | 5            | µg/L           | <5                | <br> | <br> |
| 1.2-Dichloropropane                  | 78-87-5          | 5            | µg/L           | <5                | <br> | <br> |
| cis-1.3-Dichloropropylene            | 10061-01-5       | 5            | µg/L           | <5                | <br> | <br> |
| trans-1.3-Dichloropropylene          | 10061-02-6       | 5            | µg/L           | <5                | <br> | <br> |
| 1.2-Dibromoethane (EDB)              | 106-93-4         | 5            | µg/L           | <5                | <br> | <br> |
| EP074E: Halogenated Aliphatic Compou | unds             |              |                |                   |      |      |
| Dichlorodifluoromethane              | 75-71-8          | 50           | μg/L           | <50               | <br> | <br> |

| Page       | : 4 of 9                         |
|------------|----------------------------------|
| Work Order | ES1835239                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD       |
| Project    | KYEEMAGH INFANTS SCHOOL 80818157 |



| Sub-Matrix: WATER<br>(Matrix: WATER) | Client sample ID |             |                | QA200             | <br> | <br> |
|--------------------------------------|------------------|-------------|----------------|-------------------|------|------|
|                                      | Cli              | ent samplir | ng date / time | 23-Nov-2018 00:00 | <br> | <br> |
| Compound                             | CAS Number       | LOR         | Unit           | ES1835239-001     | <br> | <br> |
|                                      |                  |             |                | Result            | <br> | <br> |
| EP074E: Halogenated Aliphatic Compo  | unds - Continued |             |                |                   |      |      |
| Chloromethane                        | 74-87-3          | 50          | µg/L           | <50               | <br> | <br> |
| Vinyl chloride                       | 75-01-4          | 50          | µg/L           | <50               | <br> | <br> |
| Bromomethane                         | 74-83-9          | 50          | µg/L           | <50               | <br> | <br> |
| Chloroethane                         | 75-00-3          | 50          | µg/L           | <50               | <br> | <br> |
| Trichlorofluoromethane               | 75-69-4          | 50          | µg/L           | <50               | <br> | <br> |
| 1.1-Dichloroethene                   | 75-35-4          | 5           | µg/L           | <5                | <br> | <br> |
| lodomethane                          | 74-88-4          | 5           | µg/L           | <5                | <br> | <br> |
| trans-1.2-Dichloroethene             | 156-60-5         | 5           | µg/L           | <5                | <br> | <br> |
| 1.1-Dichloroethane                   | 75-34-3          | 5           | µg/L           | <5                | <br> | <br> |
| cis-1.2-Dichloroethene               | 156-59-2         | 5           | µg/L           | <5                | <br> | <br> |
| 1.1.1-Trichloroethane                | 71-55-6          | 5           | µg/L           | <5                | <br> | <br> |
| 1.1-Dichloropropylene                | 563-58-6         | 5           | µg/L           | <5                | <br> | <br> |
| Carbon Tetrachloride                 | 56-23-5          | 5           | µg/L           | <5                | <br> | <br> |
| 1.2-Dichloroethane                   | 107-06-2         | 5           | µg/L           | <5                | <br> | <br> |
| Trichloroethene                      | 79-01-6          | 5           | µg/L           | <5                | <br> | <br> |
| Dibromomethane                       | 74-95-3          | 5           | µg/L           | <5                | <br> | <br> |
| 1.1.2-Trichloroethane                | 79-00-5          | 5           | µg/L           | <5                | <br> | <br> |
| 1.3-Dichloropropane                  | 142-28-9         | 5           | µg/L           | <5                | <br> | <br> |
| Tetrachloroethene                    | 127-18-4         | 5           | µg/L           | <5                | <br> | <br> |
| 1.1.1.2-Tetrachloroethane            | 630-20-6         | 5           | µg/L           | <5                | <br> | <br> |
| trans-1.4-Dichloro-2-butene          | 110-57-6         | 5           | µg/L           | <5                | <br> | <br> |
| cis-1.4-Dichloro-2-butene            | 1476-11-5        | 5           | µg/L           | <5                | <br> | <br> |
| 1.1.2.2-Tetrachloroethane            | 79-34-5          | 5           | µg/L           | <5                | <br> | <br> |
| 1.2.3-Trichloropropane               | 96-18-4          | 5           | µg/L           | <5                | <br> | <br> |
| Pentachloroethane                    | 76-01-7          | 5           | µg/L           | <5                | <br> | <br> |
| 1.2-Dibromo-3-chloropropane          | 96-12-8          | 5           | µg/L           | <5                | <br> | <br> |
| Hexachlorobutadiene                  | 87-68-3          | 5           | µg/L           | <5                | <br> | <br> |
| EP074F: Halogenated Aromatic Compo   | unds             |             |                |                   |      |      |
| Chlorobenzene                        | 108-90-7         | 5           | µg/L           | <5                | <br> | <br> |
| Bromobenzene                         | 108-86-1         | 5           | µg/L           | <5                | <br> | <br> |
| 2-Chlorotoluene                      | 95-49-8          | 5           | µg/L           | <5                | <br> | <br> |
| 4-Chlorotoluene                      | 106-43-4         | 5           | µg/L           | <5                | <br> | <br> |
| 1.3-Dichlorobenzene                  | 541-73-1         | 5           | µg/L           | <5                | <br> | <br> |
| 1.4-Dichlorobenzene                  | 106-46-7         | 5           | µg/L           | <5                | <br> | <br> |
| 1.2-Dichlorobenzene                  | 95-50-1          | 5           | µg/L           | <5                | <br> | <br> |

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|------------|----------------------------------|
| Work Order | ES1835239                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD       |
| Project    | KYEEMAGH INFANTS SCHOOL 80818157 |



| Sub-Matrix: WATER<br>(Matrix: WATER)    |                    | Clie        | ent sample ID  | QA200             |  |  |  |  |
|---|--------------------|-------------|----------------|-------------------|--|--|--|--|
|   | Cli                | ient sampli | ng date / time | 23-Nov-2018 00:00 |  |  |  |  |
| Compound                                | CAS Number         | LOR         | Unit           | ES1835239-001     |  |  |  |  |
|   |                    |             |                | Result            |  |  |  |  |
| EP074F: Halogenated Aromatic Com        | pounds - Continued |             |                |                   |  |  |  |  |
| 1.2.4-Trichlorobenzene                  | 120-82-1           | 5           | µg/L           | <5                |  |  |  |  |
| 1.2.3-Trichlorobenzene                  | 87-61-6            | 5           | µg/L           | <5                |  |  |  |  |
| EP074G: Trihalomethanes                 |                    |             |                |                   |  |  |  |  |
| Chloroform                              | 67-66-3            | 5           | µg/L           | <5                |  |  |  |  |
| Bromodichloromethane                    | 75-27-4            | 5           | µg/L           | <5                |  |  |  |  |
| Dibromochloromethane                    | 124-48-1           | 5           | µg/L           | <5                |  |  |  |  |
| Bromoform                               | 75-25-2            | 5           | µg/L           | <5                |  |  |  |  |
| EP074H: Naphthalene                     |                    |             |                |                   |  |  |  |  |
| Naphthalene                             | 91-20-3            | 5           | µg/L           | <5                |  |  |  |  |
| EP075(SIM)B: Polynuclear Aromatic       | Hydrocarbons       |             |                |                   |  |  |  |  |
| Naphthalene                             | 91-20-3            | 1.0         | µg/L           | <1.0              |  |  |  |  |
| Acenaphthylene                          | 208-96-8           | 1.0         | µg/L           | <1.0              |  |  |  |  |
| Acenaphthene                            | 83-32-9            | 1.0         | µg/L           | <1.0              |  |  |  |  |
| Fluorene                                | 86-73-7            | 1.0         | µg/L           | <1.0              |  |  |  |  |
| Phenanthrene                            | 85-01-8            | 1.0         | µg/L           | <1.0              |  |  |  |  |
| Anthracene                              | 120-12-7           | 1.0         | µg/L           | <1.0              |  |  |  |  |
| Fluoranthene                            | 206-44-0           | 1.0         | µg/L           | <1.0              |  |  |  |  |
| Pyrene                                  | 129-00-0           | 1.0         | µg/L           | <1.0              |  |  |  |  |
| Benz(a)anthracene                       | 56-55-3            | 1.0         | µg/L           | <1.0              |  |  |  |  |
| Chrysene                                | 218-01-9           | 1.0         | µg/L           | <1.0              |  |  |  |  |
| Benzo(b+j)fluoranthene                  | 205-99-2 205-82-3  | 1.0         | µg/L           | <1.0              |  |  |  |  |
| Benzo(k)fluoranthene                    | 207-08-9           | 1.0         | µg/L           | <1.0              |  |  |  |  |
| Benzo(a)pyrene                          | 50-32-8            | 0.5         | µg/L           | <0.5              |  |  |  |  |
| Indeno(1.2.3.cd)pyrene                  | 193-39-5           | 1.0         | µg/L           | <1.0              |  |  |  |  |
| Dibenz(a.h)anthracene                   | 53-70-3            | 1.0         | µg/L           | <1.0              |  |  |  |  |
| Benzo(g.h.i)perylene                    | 191-24-2           | 1.0         | µg/L           | <1.0              |  |  |  |  |
| ^ Sum of polycyclic aromatic hydrocarbo | ons                | 0.5         | µg/L           | <0.5              |  |  |  |  |
| ^ Benzo(a)pyrene TEQ (zero)             |                    | 0.5         | µg/L           | <0.5              |  |  |  |  |
| EP080/071: Total Petroleum Hydroca      | arbons             |             |                |                   |  |  |  |  |
| C6 - C9 Fraction                        |                    | 20          | µg/L           | <20               |  |  |  |  |
| C10 - C14 Fraction                      |                    | 50          | µg/L           | <50               |  |  |  |  |
| C15 - C28 Fraction                      |                    | 100         | µg/L           | <100              |  |  |  |  |
| C29 - C36 Fraction                      |                    | 50          | µg/L           | <50               |  |  |  |  |
| <sup>^</sup> C10 - C36 Fraction (sum)   |                    | 50          | µg/L           | <50               |  |  |  |  |

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|------------|----------------------------------|
| Work Order | ES1835239                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD       |
| Project    | KYEEMAGH INFANTS SCHOOL 80818157 |



| Sub-Matrix: WATER<br>(Matrix: WATER)      | Client sample ID |             |                | QA200             | <br> | <br> |
|---|------------------|-------------|----------------|-------------------|------|------|
|   | Cli              | ent samplir | ng date / time | 23-Nov-2018 00:00 | <br> | <br> |
| Compound                                  | CAS Number       | LOR         | Unit           | ES1835239-001     | <br> | <br> |
|   |                  |             |                | Result            | <br> | <br> |
| EP080/071: Total Recoverable Hydrocarb    | oons - NEPM 201  | 3 Fractior  | IS             |                   |      |      |
| C6 - C10 Fraction                         | C6_C10           | 20          | µg/L           | <20               | <br> | <br> |
| <sup>^</sup> C6 - C10 Fraction minus BTEX | C6_C10-BTEX      | 20          | µg/L           | <20               | <br> | <br> |
| (F1)                                      |                  |             |                |                   |      |      |
| >C10 - C16 Fraction                       |                  | 100         | µg/L           | <100              | <br> | <br> |
| >C16 - C34 Fraction                       |                  | 100         | µg/L           | <100              | <br> | <br> |
| >C34 - C40 Fraction                       |                  | 100         | µg/L           | <100              | <br> | <br> |
| ^ >C10 - C40 Fraction (sum)               |                  | 100         | µg/L           | <100              | <br> | <br> |
| ^ >C10 - C16 Fraction minus Naphthalene   |                  | 100         | µg/L           | <100              | <br> | <br> |
| (F2)                                      |                  |             |                |                   |      |      |
| EP080: BTEXN                              |                  |             |                |                   |      |      |
| Benzene                                   | 71-43-2          | 1           | µg/L           | <1                | <br> | <br> |
| Toluene                                   | 108-88-3         | 2           | µg/L           | <2                | <br> | <br> |
| Ethylbenzene                              | 100-41-4         | 2           | µg/L           | <2                | <br> | <br> |
| meta- & para-Xylene 1                     | 08-38-3 106-42-3 | 2           | µg/L           | <2                | <br> | <br> |
| ortho-Xylene                              | 95-47-6          | 2           | µg/L           | <2                | <br> | <br> |
| ^ Total Xylenes                           |                  | 2           | µg/L           | <2                | <br> | <br> |
| ^ Sum of BTEX                             |                  | 1           | µg/L           | <1                | <br> | <br> |
| Naphthalene                               | 91-20-3          | 5           | µg/L           | <5                | <br> | <br> |
| EP231A: Perfluoroalkyl Sulfonic Acids     |                  |             |                |                   |      |      |
| Perfluorobutane sulfonic acid             | 375-73-5         | 0.02        | µg/L           | <0.02             | <br> | <br> |
| (PFBS)                                    |                  |             |                |                   |      |      |
| Perfluoropentane sulfonic acid<br>(PFPeS) | 2706-91-4        | 0.02        | µg/L           | <0.02             | <br> | <br> |
| Perfluorohexane sulfonic acid<br>(PFHxS)  | 355-46-4         | 0.02        | µg/L           | <0.02             | <br> | <br> |
| Perfluoroheptane sulfonic acid            | 375-92-8         | 0.02        | µg/L           | <0.02             | <br> | <br> |
| Perfluorooctane sulfonic acid             | 1763-23-1        | 0.01        | µg/L           | <0.01             | <br> | <br> |
| (PFOS)                                    |                  |             |                |                   |      |      |
| Perfluorodecane sulfonic acid<br>(PFDS)   | 335-77-3         | 0.02        | µg/L           | <0.02             | <br> | <br> |
| EP231B: Perfluoroalkyl Carboxylic Acids   | s                |             |                |                   |      |      |
| Perfluorobutanoic acid (PFBA)             | 375-22-4         | 0.1         | µg/L           | <0.1              | <br> | <br> |
| Perfluoropentanoic acid (PFPeA)           | 2706-90-3        | 0.02        | µg/L           | <0.02             | <br> | <br> |
| Perfluorohexanoic acid (PFHxA)            | 307-24-4         | 0.02        | µg/L           | <0.02             | <br> | <br> |

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|------------|----------------------------------|
| Work Order | ES1835239                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD       |
| Project    | KYEEMAGH INFANTS SCHOOL 80818157 |



| Sub-Matrix: WATER<br>(Matrix: WATER)                            |               | Clie        | ent sample ID  | QA200             | <br> | <br> |
|---|---------------|-------------|----------------|-------------------|------|------|
|   | Cli           | ent samplir | ng date / time | 23-Nov-2018 00:00 | <br> | <br> |
| Compound  | CAS Number    | LOR         | Unit           | ES1835239-001     | <br> | <br> |
|   |               |             |                | Result            | <br> | <br> |
| EP231B: Perfluoroalkyl Carboxylic Acid                          | s - Continued |             |                |                   |      |      |
| Perfluoroheptanoic acid (PFHpA)                                 | 375-85-9      | 0.02        | µg/L           | <0.02             | <br> | <br> |
| Perfluorooctanoic acid (PFOA)                                   | 335-67-1      | 0.01        | µg/L           | <0.01             | <br> | <br> |
| Perfluorononanoic acid (PFNA)                                   | 375-95-1      | 0.02        | µg/L           | <0.02             | <br> | <br> |
| Perfluorodecanoic acid (PFDA)                                   | 335-76-2      | 0.02        | µg/L           | <0.02             | <br> | <br> |
| Perfluoroundecanoic acid<br>(PFUnDA)                            | 2058-94-8     | 0.02        | µg/L           | <0.02             | <br> | <br> |
| Perfluorododecanoic acid<br>(PFDoDA)                            | 307-55-1      | 0.02        | µg/L           | <0.02             | <br> | <br> |
| Perfluorotridecanoic acid<br>(PFTrDA)                           | 72629-94-8    | 0.02        | µg/L           | <0.02             | <br> | <br> |
| Perfluorotetradecanoic acid<br>(PFTeDA)                         | 376-06-7      | 0.05        | µg/L           | <0.05             | <br> | <br> |
| EP231C: Perfluoroalkyl Sulfonamides                             |               |             |                |                   |      |      |
| Perfluorooctane sulfonamide<br>(FOSA)                           | 754-91-6      | 0.02        | µg/L           | <0.02             | <br> | <br> |
| N-Methyl perfluorooctane<br>sulfonamide (MeFOSA)                | 31506-32-8    | 0.05        | µg/L           | <0.05             | <br> | <br> |
| N-Ethyl perfluorooctane<br>sulfonamide (EtFOSA)                 | 4151-50-2     | 0.05        | µg/L           | <0.05             | <br> | <br> |
| N-Methyl perfluorooctane<br>sulfonamidoethanol (MeFOSE)         | 24448-09-7    | 0.05        | µg/L           | <0.05             | <br> | <br> |
| N-Ethyl perfluorooctane<br>sulfonamidoethanol (EtFOSE)          | 1691-99-2     | 0.05        | µg/L           | <0.05             | <br> | <br> |
| N-Methyl perfluorooctane<br>sulfonamidoacetic acid<br>(MeFOSAA) | 2355-31-9     | 0.02        | µg/L           | <0.02             | <br> | <br> |
| N-Ethyl perfluorooctane<br>sulfonamidoacetic acid<br>(EtFOSAA)  | 2991-50-6     | 0.02        | µg/L           | <0.02             | <br> | <br> |
| EP231D: (n:2) Fluorotelomer Sulfonic A                          | cids          |             |                |                   |      |      |
| 4:2 Fluorotelomer sulfonic acid<br>(4:2 FTS)                    | 757124-72-4   | 0.05        | µg/L           | <0.05             | <br> | <br> |
| 6:2 Fluorotelomer sulfonic acid<br>(6:2 FTS)                    | 27619-97-2    | 0.05        | µg/L           | <0.05             | <br> | <br> |
| 8:2 Fluorotelomer sulfonic acid<br>(8:2 FTS)                    | 39108-34-4    | 0.05        | µg/L           | <0.05             | <br> | <br> |



| Sub-Matrix: WATER<br>(Matrix: WATER) |                        | Clie        | ent sample ID  | QA200             | <br> | <br> |
|--------------------------------------|------------------------|-------------|----------------|-------------------|------|------|
|                                      | Cl                     | ient sampli | ng date / time | 23-Nov-2018 00:00 | <br> | <br> |
| Compound                             | CAS Number             | LOR         | Unit           | ES1835239-001     | <br> | <br> |
|                                      |                        |             |                | Result            | <br> | <br> |
| EP231D: (n:2) Fluorotelomer Sulfon   | ic Acids - Continued   |             |                |                   |      |      |
| 10:2 Fluorotelomer sulfonic acid     | 120226-60-0            | 0.05        | µg/L           | <0.05             | <br> | <br> |
| (10:2 FTS)                           |                        |             |                |                   |      |      |
| EP231P: PFAS Sums                    |                        |             |                |                   |      |      |
| Sum of PFAS                          |                        | 0.01        | μg/L           | <0.01             | <br> | <br> |
| Sum of PFHxS and PFOS                | 355-46-4/1763-23-<br>1 | 0.01        | µg/L           | <0.01             | <br> | <br> |
| Sum of PFAS (WA DER List)            |                        | 0.01        | µg/L           | <0.01             | <br> | <br> |
| EP074S: VOC Surrogates               |                        |             |                |                   |      |      |
| 1.2-Dichloroethane-D4                | 17060-07-0             | 5           | %              | 124               | <br> | <br> |
| Toluene-D8                           | 2037-26-5              | 5           | %              | 98.4              | <br> | <br> |
| 4-Bromofluorobenzene                 | 460-00-4               | 5           | %              | 99.1              | <br> | <br> |
| EP075(SIM)S: Phenolic Compound S     | Surrogates             |             |                |                   |      |      |
| Phenol-d6                            | 13127-88-3             | 1.0         | %              | 19.9              | <br> | <br> |
| 2-Chlorophenol-D4                    | 93951-73-6             | 1.0         | %              | 42.7              | <br> | <br> |
| 2.4.6-Tribromophenol                 | 118-79-6               | 1.0         | %              | 51.9              | <br> | <br> |
| EP075(SIM)T: PAH Surrogates          |                        |             |                |                   |      |      |
| 2-Fluorobiphenyl                     | 321-60-8               | 1.0         | %              | 78.0              | <br> | <br> |
| Anthracene-d10                       | 1719-06-8              | 1.0         | %              | 70.7              | <br> | <br> |
| 4-Terphenyl-d14                      | 1718-51-0              | 1.0         | %              | 92.3              | <br> | <br> |
| EP080S: TPH(V)/BTEX Surrogates       |                        |             |                |                   |      |      |
| 1.2-Dichloroethane-D4                | 17060-07-0             | 2           | %              | 125               | <br> | <br> |
| Toluene-D8                           | 2037-26-5              | 2           | %              | 95.3              | <br> | <br> |
| 4-Bromofluorobenzene                 | 460-00-4               | 2           | %              | 92.4              | <br> | <br> |
| EP231S: PFAS Surrogate               |                        |             |                |                   |      |      |
| 13C4-PFOS                            |                        | 0.02        | %              | 97.6              | <br> | <br> |
| 13C8-PFOA                            |                        | 0.02        | %              | 116               | <br> | <br> |



# Surrogate Control Limits

| Sub-Matrix: WATER                       |            | Recovery | Limits (%) |
|---|------------|----------|------------|
| Compound                                | CAS Number | Low      | High       |
| EP074S: VOC Surrogates                  |            |          |            |
| 1.2-Dichloroethane-D4                   | 17060-07-0 | 78       | 133        |
| Toluene-D8                              | 2037-26-5  | 79       | 129        |
| 4-Bromofluorobenzene                    | 460-00-4   | 81       | 124        |
| EP075(SIM)S: Phenolic Compound Surrogat | es         |          |            |
| Phenol-d6                               | 13127-88-3 | 10       | 44         |
| 2-Chlorophenol-D4                       | 93951-73-6 | 14       | 94         |
| 2.4.6-Tribromophenol                    | 118-79-6   | 17       | 125        |
| EP075(SIM)T: PAH Surrogates             |            |          |            |
| 2-Fluorobiphenyl                        | 321-60-8   | 20       | 104        |
| Anthracene-d10                          | 1719-06-8  | 27       | 113        |
| 4-Terphenyl-d14                         | 1718-51-0  | 32       | 112        |
| EP080S: TPH(V)/BTEX Surrogates          |            |          |            |
| 1.2-Dichloroethane-D4                   | 17060-07-0 | 71       | 137        |
| Toluene-D8                              | 2037-26-5  | 79       | 131        |
| 4-Bromofluorobenzene                    | 460-00-4   | 70       | 128        |
| EP231S: PFAS Surrogate                  |            |          |            |
| 13C4-PFOS                               |            | 60       | 120        |
| 13C8-PFOA                               |            | 60       | 120        |



# **QUALITY CONTROL REPORT**

| Work Order              | : ES1835239   | Page                    | : 1 of 16                   |                                |
|-------------------------|---|-------------------------|-----------------------------|--------------------------------|
| Client                  | : CARDNO (NSW/ACT) PTY LTD                                      | Laboratory              | : Environmental Division Sy | ydney                          |
| Contact                 | : MR BEN WITHNALL   | Contact                 | : Customer Services ES      |                                |
| Address                 | : Level 9 The Forum 203 Pacific Highway<br>St Leonards NSW 2065 | Address                 | : 277-289 Woodpark Road     | Smithfield NSW Australia 2164  |
| Telephone               | : +61 2 9495 8188   | Telephone               | : +61-2-8784 8555           |                                |
| Project                 | : KYEEMAGH INFANTS SCHOOL 80818157                              | Date Samples Received   | : 26-Nov-2018               | WIIIII.                        |
| Order number            | :   | Date Analysis Commenced | : 27-Nov-2018               |                                |
| C-O-C number            | :   | Issue Date              | : 03-Dec-2018               | NATA                           |
| Sampler                 | : JOEL GRIFFITHS  |                         |                             | Hac-MRA NATA                   |
| Site                    | :   |                         |                             |                                |
| Quote number            | : EN/222 - Secondary Work                                       |                         |                             | Accreditation No. 825          |
| No. of samples received | : 1   |                         |                             | Accredited for compliance with |
| No. of samples analysed | : 1   |                         |                             | ISO/IEC 17025 - Testing        |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full. This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

| Signatories      | Position              | Accreditation Category             |
|------------------|-----------------------|------------------------------------|
| Celine Conceicao | Senior Spectroscopist | Sydney Inorganics, Smithfield, NSW |
| Edwandy Fadjar   | Organic Coordinator   | Sydney Organics, Smithfield, NSW   |
| Franco Lentini   |                       | Sydney Organics, Smithfield, NSW   |



### **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key: Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

- CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
- LOR = Limit of reporting
- RPD = Relative Percentage Difference
- # = Indicates failed QC

### Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

| Sub-Matrix: WATER    |                        |                               |            | Laboratory Duplicate (DUP) Report |      |                 |                  |         |                     |
|----------------------|------------------------|-------------------------------|------------|-----------------------------------|------|-----------------|------------------|---------|---------------------|
| Laboratory sample ID | Client sample ID       | Method: Compound              | CAS Number | LOR                               | Unit | Original Result | Duplicate Result | RPD (%) | Recovery Limits (%) |
| EG020F: Dissolved I  | letals by ICP-MS (QC I | Lot: 2061594)                 |            |                                   |      |                 |                  |         |                     |
| ES1835399-007        | Anonymous              | EG020A-F: Cadmium             | 7440-43-9  | 0.0001                            | mg/L | <0.0001         | <0.0001          | 0.00    | No Limit            |
|                      |                        | EG020A-F: Arsenic             | 7440-38-2  | 0.001                             | mg/L | <0.001          | <0.001           | 0.00    | No Limit            |
|                      |                        | EG020A-F: Chromium            | 7440-47-3  | 0.001                             | mg/L | 0.003           | 0.004            | 0.00    | No Limit            |
|                      |                        | EG020A-F: Copper              | 7440-50-8  | 0.001                             | mg/L | 0.002           | 0.002            | 0.00    | No Limit            |
|                      |                        | EG020A-F: Lead                | 7439-92-1  | 0.001                             | mg/L | <0.001          | <0.001           | 0.00    | No Limit            |
|                      |                        | EG020A-F: Nickel              | 7440-02-0  | 0.001                             | mg/L | 0.006           | 0.006            | 0.00    | No Limit            |
|                      |                        | EG020A-F: Zinc                | 7440-66-6  | 0.005                             | mg/L | 0.006           | 0.006            | 0.00    | No Limit            |
| ES1835387-001        | Anonymous              | EG020A-F: Cadmium             | 7440-43-9  | 0.0001                            | mg/L | <0.0001         | <0.0001          | 0.00    | No Limit            |
|                      |                        | EG020A-F: Arsenic             | 7440-38-2  | 0.001                             | mg/L | <0.001          | <0.001           | 0.00    | No Limit            |
|                      |                        | EG020A-F: Chromium            | 7440-47-3  | 0.001                             | mg/L | <0.001          | <0.001           | 0.00    | No Limit            |
|                      |                        | EG020A-F: Copper              | 7440-50-8  | 0.001                             | mg/L | <0.001          | <0.001           | 0.00    | No Limit            |
|                      |                        | EG020A-F: Lead                | 7439-92-1  | 0.001                             | mg/L | <0.001          | <0.001           | 0.00    | No Limit            |
|                      |                        | EG020A-F: Nickel              | 7440-02-0  | 0.001                             | mg/L | 0.008           | 0.008            | 0.00    | No Limit            |
|                      |                        | EG020A-F: Zinc                | 7440-66-6  | 0.005                             | mg/L | <0.005          | <0.005           | 0.00    | No Limit            |
| EG035F: Dissolved I  | Mercury by FIMS (QC L  | ot: 2061595)                  |            |                                   |      |                 |                  |         |                     |
| ES1835387-001        | Anonymous              | EG035F: Mercury               | 7439-97-6  | 0.0001                            | mg/L | <0.0001         | <0.0001          | 0.00    | No Limit            |
| EP074A: Monocyclic   | Aromatic Hydrocarbor   | ns (QC Lot: 2062578)          |            |                                   |      |                 |                  |         |                     |
| ES1835399-007        | Anonymous              | EP074: Styrene                | 100-42-5   | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                        | EP074: Isopropylbenzene       | 98-82-8    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                        | EP074: n-Propylbenzene        | 103-65-1   | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                        | EP074: 1.3.5-Trimethylbenzene | 108-67-8   | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                        | EP074: sec-Butylbenzene       | 135-98-8   | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                        | EP074: 1.2.4-Trimethylbenzene | 95-63-6    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                        | EP074: tert-Butylbenzene      | 98-06-6    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |

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|------------|------------------------------------|
| Work Order | : ES1835239                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : KYEEMAGH INFANTS SCHOOL 80818157 |



| Sub-Matrix: WATER    |                       |                                    |            |     |      | Laboratory      | Duplicate (DUP) Repor | t       |                     |
|----------------------|-----------------------|------------------------------------|------------|-----|------|-----------------|-----------------------|---------|---------------------|
| Laboratory sample ID | Client sample ID      | Method: Compound                   | CAS Number | LOR | Unit | Original Result | Duplicate Result      | RPD (%) | Recovery Limits (%) |
| EP074A: Monocycl     | ic Aromatic Hydrocarb | ons (QC Lot: 2062578) - continued  |            |     |      |                 |                       |         |                     |
| ES1835399-007        | Anonymous             | EP074: p-lsopropyltoluene          | 99-87-6    | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: n-Butylbenzene              | 104-51-8   | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
| ES1835239-001        | QA200                 | EP074: Styrene                     | 100-42-5   | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: Isopropylbenzene            | 98-82-8    | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: n-Propylbenzene             | 103-65-1   | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: 1.3.5-Trimethylbenzene      | 108-67-8   | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: sec-Butylbenzene            | 135-98-8   | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: 1.2.4-Trimethylbenzene      | 95-63-6    | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: tert-Butylbenzene           | 98-06-6    | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: p-lsopropyltoluene          | 99-87-6    | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: n-Butylbenzene              | 104-51-8   | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
| EP074B: Oxygenat     | ed Compounds (QC Lo   | ot: 2062578)                       |            |     |      |                 |                       |         |                     |
| ES1835399-007        | Anonymous             | EP074: Vinyl Acetate               | 108-05-4   | 50  | ug/L | <50             | <50                   | 0.00    | No Limit            |
|                      | ,                     | EP074: 2-Butanone (MEK)            | 78-93-3    | 50  | ug/L | <50             | <50                   | 0.00    | No Limit            |
|                      |                       | EP074: 4-Methyl-2-pentanone (MIBK) | 108-10-1   | 50  | ug/L | <50             | <50                   | 0.00    | No Limit            |
|                      |                       | EP074: 2-Hexanone (MBK)            | 591-78-6   | 50  | ug/L | <50             | <50                   | 0.00    | No Limit            |
| ES1835239-001        | QA200                 | EP074: Vinvl Acetate               | 108-05-4   | 50  | µg/L | <50             | <50                   | 0.00    | No Limit            |
|                      |                       | EP074: 2-Butanone (MEK)            | 78-93-3    | 50  | µg/L | <50             | <50                   | 0.00    | No Limit            |
|                      |                       | EP074: 4-Methyl-2-pentanone (MIBK) | 108-10-1   | 50  | ug/L | <50             | <50                   | 0.00    | No Limit            |
|                      |                       | EP074: 2-Hexanone (MBK)            | 591-78-6   | 50  | ug/L | <50             | <50                   | 0.00    | No Limit            |
| EP074C: Sulfonate    | d Compounds (OC Lot   | : 2062578)                         |            |     | 10   |                 |                       |         |                     |
| ES1835399-007        |                       | EB074: Corbon digulfide            | 75-15-0    | 5   | ug/l | <5              | <5                    | 0.00    | No Limit            |
| ES1835230-001        |                       | EP074. Carbon disulfide            | 75-15-0    | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: Carbon disulfide            | 75-15-0    | 5   | µg/L | ~5              | ~5                    | 0.00    |                     |
| EP074D: Fumigant     | s (QC Lot: 2062578)   |                                    |            |     |      | _               |                       |         |                     |
| ES1835399-007        | Anonymous             | EP074: 2.2-Dichloropropane         | 594-20-7   | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: 1.2-Dichloropropane         | 78-87-5    | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: cis-1.3-Dichloropropylene   | 10061-01-5 | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: trans-1.3-Dichloropropylene | 10061-02-6 | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: 1.2-Dibromoethane (EDB)     | 106-93-4   | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
| ES1835239-001        | QA200                 | EP074: 2.2-Dichloropropane         | 594-20-7   | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: 1.2-Dichloropropane         | 78-87-5    | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: cis-1.3-Dichloropropylene   | 10061-01-5 | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: trans-1.3-Dichloropropylene | 10061-02-6 | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: 1.2-Dibromoethane (EDB)     | 106-93-4   | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
| EP074E: Halogena     | ted Aliphatic Compoun | ds (QC Lot: 2062578)               |            |     |      |                 |                       |         |                     |
| ES1835399-007        | Anonymous             | EP074: 1.1-Dichloroethene          | 75-35-4    | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: lodomethane                 | 74-88-4    | 5   | μg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: trans-1.2-Dichloroethene    | 156-60-5   | 5   | μg/L | <5              | <5                    | 0.00    | No Limit            |
|                      |                       | EP074: 1.1-Dichloroethane          | 75-34-3    | 5   | µg/L | <5              | <5                    | 0.00    | No Limit            |

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|------------|------------------------------------|
| Work Order | : ES1835239                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : KYEEMAGH INFANTS SCHOOL 80818157 |



| Sub-Matrix: WATER    |                         |                                    | Laboratory Duplicate (DUP) Report |     |      |                 |                  |         |                     |
|----------------------|-------------------------|------------------------------------|-----------------------------------|-----|------|-----------------|------------------|---------|---------------------|
| Laboratory sample ID | Client sample ID        | Method: Compound                   | CAS Number                        | LOR | Unit | Original Result | Duplicate Result | RPD (%) | Recovery Limits (%) |
| EP074E: Halogenated  | Aliphatic Compounds (QC | C Lot: 2062578) - continued        |                                   |     |      |                 |                  |         |                     |
| ES1835399-007        | Anonymous               | EP074: cis-1.2-Dichloroethene      | 156-59-2                          | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.1.1-Trichloroethane       | 71-55-6                           | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.1-Dichloropropylene       | 563-58-6                          | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Carbon Tetrachloride        | 56-23-5                           | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.2-Dichloroethane          | 107-06-2                          | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Trichloroethene             | 79-01-6                           | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Dibromomethane              | 74-95-3                           | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.1.2-Trichloroethane       | 79-00-5                           | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.3-Dichloropropane         | 142-28-9                          | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Tetrachloroethene           | 127-18-4                          | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.1.1.2-Tetrachloroethane   | 630-20-6                          | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: trans-1.4-Dichloro-2-butene | 110-57-6                          | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: cis-1.4-Dichloro-2-butene   | 1476-11-5                         | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.1.2.2-Tetrachloroethane   | 79-34-5                           | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.2.3-Trichloropropane      | 96-18-4                           | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Pentachloroethane           | 76-01-7                           | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.2-Dibromo-3-chloropropane | 96-12-8                           | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Hexachlorobutadiene         | 87-68-3                           | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Dichlorodifluoromethane     | 75-71-8                           | 50  | µg/L | <50             | <50              | 0.00    | No Limit            |
|                      |                         | EP074: Chloromethane               | 74-87-3                           | 50  | µg/L | <50             | <50              | 0.00    | No Limit            |
|                      |                         | EP074: Vinyl chloride              | 75-01-4                           | 50  | µg/L | <50             | <50              | 0.00    | No Limit            |
|                      |                         | EP074: Bromomethane                | 74-83-9                           | 50  | μg/L | <50             | <50              | 0.00    | No Limit            |
|                      |                         | EP074: Chloroethane                | 75-00-3                           | 50  | μg/L | <50             | <50              | 0.00    | No Limit            |
|                      |                         | EP074: Trichlorofluoromethane      | 75-69-4                           | 50  | μg/L | <50             | <50              | 0.00    | No Limit            |
| ES1835239-001        | QA200                   | EP074: 1.1-Dichloroethene          | 75-35-4                           | 5   | μg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Iodomethane                 | 74-88-4                           | 5   | μg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: trans-1.2-Dichloroethene    | 156-60-5                          | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.1-Dichloroethane          | 75-34-3                           | 5   | μg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: cis-1.2-Dichloroethene      | 156-59-2                          | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.1.1-Trichloroethane       | 71-55-6                           | 5   | μg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.1-Dichloropropylene       | 563-58-6                          | 5   | μg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Carbon Tetrachloride        | 56-23-5                           | 5   | μg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.2-Dichloroethane          | 107-06-2                          | 5   | μg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Trichloroethene             | 79-01-6                           | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Dibromomethane              | 74-95-3                           | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.1.2-Trichloroethane       | 79-00-5                           | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.3-Dichloropropane         | 142-28-9                          | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Tetrachloroethene           | 127-18-4                          | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.1.1.2-Tetrachloroethane   | 630-20-6                          | 5   | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: trans-1.4-Dichloro-2-butene | 110-57-6                          | 5   | μg/L | <5              | <5               | 0.00    | No Limit            |

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|------------|------------------------------------|
| Work Order | : ES1835239                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : KYEEMAGH INFANTS SCHOOL 80818157 |



| Sub-Matrix: WATER    |                         |                                    |            | Laboratory Duplicate (DUP) Report |      |                 |                  |         |                     |
|----------------------|-------------------------|------------------------------------|------------|-----------------------------------|------|-----------------|------------------|---------|---------------------|
| Laboratory sample ID | Client sample ID        | Method: Compound                   | CAS Number | LOR                               | Unit | Original Result | Duplicate Result | RPD (%) | Recovery Limits (%) |
| EP074E: Halogenate   | d Aliphatic Compounds   | (QC Lot: 2062578) - continued      |            |                                   |      |                 |                  |         |                     |
| ES1835239-001        | QA200                   | EP074: cis-1.4-Dichloro-2-butene   | 1476-11-5  | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.1.2.2-Tetrachloroethane   | 79-34-5    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.2.3-Trichloropropane      | 96-18-4    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Pentachloroethane           | 76-01-7    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.2-Dibromo-3-chloropropane | 96-12-8    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Hexachlorobutadiene         | 87-68-3    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Dichlorodifluoromethane     | 75-71-8    | 50                                | µg/L | <50             | <50              | 0.00    | No Limit            |
|                      |                         | EP074: Chloromethane               | 74-87-3    | 50                                | µg/L | <50             | <50              | 0.00    | No Limit            |
|                      |                         | EP074: Vinyl chloride              | 75-01-4    | 50                                | µg/L | <50             | <50              | 0.00    | No Limit            |
|                      |                         | EP074: Bromomethane                | 74-83-9    | 50                                | µg/L | <50             | <50              | 0.00    | No Limit            |
|                      |                         | EP074: Chloroethane                | 75-00-3    | 50                                | μg/L | <50             | <50              | 0.00    | No Limit            |
|                      |                         | EP074: Trichlorofluoromethane      | 75-69-4    | 50                                | μg/L | <50             | <50              | 0.00    | No Limit            |
| EP074F: Halogenate   | d Aromatic Compounds    | (QC Lot: 2062578)                  |            |                                   |      |                 |                  |         |                     |
| ES1835399-007        | Anonymous               | EP074: Chlorobenzene               | 108-90-7   | 5                                 | μg/L | <5              | <5               | 0.00    | No Limit            |
|                      | -                       | EP074: Bromobenzene                | 108-86-1   | 5                                 | μg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 2-Chlorotoluene             | 95-49-8    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 4-Chlorotoluene             | 106-43-4   | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.3-Dichlorobenzene         | 541-73-1   | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.4-Dichlorobenzene         | 106-46-7   | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.2-Dichlorobenzene         | 95-50-1    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.2.4-Trichlorobenzene      | 120-82-1   | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.2.3-Trichlorobenzene      | 87-61-6    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
| ES1835239-001        | QA200                   | EP074: Chlorobenzene               | 108-90-7   | 5                                 | μg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Bromobenzene                | 108-86-1   | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 2-Chlorotoluene             | 95-49-8    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 4-Chlorotoluene             | 106-43-4   | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.3-Dichlorobenzene         | 541-73-1   | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.4-Dichlorobenzene         | 106-46-7   | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.2-Dichlorobenzene         | 95-50-1    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.2.4-Trichlorobenzene      | 120-82-1   | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: 1.2.3-Trichlorobenzene      | 87-61-6    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
| EP074G: Trihalomet   | hanes (QC Lot: 2062578) |                                    |            |                                   |      |                 |                  |         |                     |
| ES1835399-007        | Anonymous               | EP074: Chloroform                  | 67-66-3    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Bromodichloromethane        | 75-27-4    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Dibromochloromethane        | 124-48-1   | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Bromoform                   | 75-25-2    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
| ES1835239-001        | QA200                   | EP074: Chloroform                  | 67-66-3    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Bromodichloromethane        | 75-27-4    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Dibromochloromethane        | 124-48-1   | 5                                 | μg/L | <5              | <5               | 0.00    | No Limit            |
|                      |                         | EP074: Bromoform                   | 75-25-2    | 5                                 | µg/L | <5              | <5               | 0.00    | No Limit            |

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| Work Order | : ES1835239                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : KYEEMAGH INFANTS SCHOOL 80818157 |



| Sub-Matrix: WATER   |  |                                      |            |     |      | Laboratory L    | Duplicate (DUP) Report |         |                     |
|---|--|--------------------------------------|------------|-----|------|-----------------|------------------------|---------|---------------------|
| Laboratory sample ID  | Client sample ID   | Method: Compound                     | CAS Number | LOR | Unit | Original Result | Duplicate Result       | RPD (%) | Recovery Limits (%) |
| EP074H: Naphthalen  | e (QC Lot: 2062578)  |                                      |            |     |      |                 |                        |         |                     |
| ES1835399-007   | Anonymous  | EP074: Naphthalene                   | 91-20-3    | 5   | µg/L | <5              | <5                     | 0.00    | No Limit            |
| ES1835239-001   | QA200  | EP074: Naphthalene                   | 91-20-3    | 5   | μg/L | <5              | <5                     | 0.00    | No Limit            |
| EP075(SIM)B: Polyn  | uclear Aromatic Hydrocarbo   | ons (QC Lot: 2058890)                |            |     |      |                 |                        |         |                     |
| ES1835207-001   | Anonymous  | EP075(SIM): Benzo(a)pyrene           | 50-32-8    | 0.5 | μg/L | <0.5            | <0.5                   | 0.00    | No Limit            |
|   |  | EP075(SIM): Naphthalene              | 91-20-3    | 1   | μg/L | <1.0            | <1.0                   | 0.00    | No Limit            |
|   |  | EP075(SIM): Acenaphthylene           | 208-96-8   | 1   | μg/L | <1.0            | <1.0                   | 0.00    | No Limit            |
|   |  | EP075(SIM): Acenaphthene             | 83-32-9    | 1   | µg/L | <1.0            | <1.0                   | 0.00    | No Limit            |
|   |  | EP075(SIM): Fluorene                 | 86-73-7    | 1   | µg/L | <1.0            | <1.0                   | 0.00    | No Limit            |
|   |  | EP075(SIM): Phenanthrene             | 85-01-8    | 1   | µg/L | <1.0            | <1.0                   | 0.00    | No Limit            |
|   |  | EP075(SIM): Anthracene               | 120-12-7   | 1   | µg/L | <1.0            | <1.0                   | 0.00    | No Limit            |
|   |  | EP075(SIM): Fluoranthene             | 206-44-0   | 1   | µg/L | <1.0            | <1.0                   | 0.00    | No Limit            |
|   |  | EP075(SIM): Pyrene                   | 129-00-0   | 1   | µg/L | <1.0            | <1.0                   | 0.00    | No Limit            |
|   |  | EP075(SIM): Benz(a)anthracene        | 56-55-3    | 1   | µg/L | <1.0            | <1.0                   | 0.00    | No Limit            |
|   |  | EP075(SIM): Chrysene                 | 218-01-9   | 1   | µg/L | <1.0            | <1.0                   | 0.00    | No Limit            |
|   |  | EP075(SIM): Benzo(b+j)fluoranthene   | 205-99-2   | 1   | µg/L | <1.0            | <1.0                   | 0.00    | No Limit            |
|   |  |                                      | 205-82-3   |     |      |                 |                        |         |                     |
|   |  | EP075(SIM): Benzo(k)fluoranthene     | 207-08-9   | 1   | µg/L | <1.0            | <1.0                   | 0.00    | No Limit            |
|   |  | EP075(SIM): Indeno(1.2.3.cd)pyrene   | 193-39-5   | 1   | µg/L | <1.0            | <1.0                   | 0.00    | No Limit            |
|   |  | EP075(SIM): Dibenz(a.h)anthracene    | 53-70-3    | 1   | µg/L | <1.0            | <1.0                   | 0.00    | No Limit            |
|   |  | EP075(SIM): Benzo(g.h.i)perylene     | 191-24-2   | 1   | µg/L | <1.0            | <1.0                   | 0.00    | No Limit            |
| EP080/071: Total Pet  | roleum Hydrocarbons (QC  | Lot: 2058891)                        |            |     |      |                 |                        |         |                     |
| ES1835207-001   | Anonymous  | EP071: C15 - C28 Fraction            |            | 100 | µg/L | <100            | <100                   | 0.00    | No Limit            |
|   |  | EP071: C10 - C14 Fraction            |            | 50  | µg/L | <50             | <50                    | 0.00    | No Limit            |
|   |  | EP071: C29 - C36 Fraction            |            | 50  | μg/L | <50             | <50                    | 0.00    | No Limit            |
| EP080/071: Total Pet  | roleum Hydrocarbons (QC  | Lot: 2062577)                        |            |     |      |                 |                        |         |                     |
| ES1835239-001   | QA200  | EP080: C6 - C9 Fraction              |            | 20  | µg/L | <20             | <20                    | 0.00    | No Limit            |
| EP080/071: Total Red  | coverable Hydrocarbons - N   | EPM 2013 Fractions (QC Lot: 2058891) |            |     |      |                 |                        |         |                     |
| ES1835207-001   | Anonymous  | EP071: >C10 - C16 Fraction           |            | 100 | µg/L | <100            | <100                   | 0.00    | No Limit            |
|   |  | EP071: >C16 - C34 Fraction           |            | 100 | µg/L | <100            | <100                   | 0.00    | No Limit            |
|   |  | EP071: >C34 - C40 Fraction           |            | 100 | µg/L | <100            | <100                   | 0.00    | No Limit            |
| EP080/071: Total Re   | coverable Hydrocarbons - N   | EPM 2013 Fractions (QC Lot: 2062577) |            |     |      |                 |                        |         |                     |
| ES1835239-001   | QA200  | EP080: C6 - C10 Fraction             | C6 C10     | 20  | µq/L | <20             | <20                    | 0.00    | No Limit            |
| EP080: BTEXN_(QC  | Lot: 2062577)  |                                      |            |     |      |                 |                        |         |                     |
| ES1835239-001   | QA200  | EP080 <sup>°</sup> Benzene           | 71-43-2    | 1   | ua/L | <1              | <1                     | 0.00    | No Limit            |
|   |  | EP080: Toluene                       | 108-88-3   | 2   | µg/L | <2              | <2                     | 0.00    | No Limit            |
|   |  | EP080: Ethylpenzene                  | 100-41-4   | 2   | µg/L | <2              | <2                     | 0.00    | No Limit            |
|   |  | EP080: meta- & para-Xylene           | 108-38-3   | 2   | μg/L | <2              | <2                     | 0.00    | No Limit            |
|   |  |                                      | 106-42-3   |     |      |                 |                        |         |                     |
|   |  | EP080: ortho-Xylene                  | 95-47-6    | 2   | µg/L | <2              | <2                     | 0.00    | No Limit            |
| <ul> <li>A second sec<br/>second second ></ul> | and the second second second second second second second second second second second second second second second |                                      |            |     |      |                 |                        |         |                     |

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|------------|------------------------------------|
| Work Order | : ES1835239                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : KYEEMAGH INFANTS SCHOOL 80818157 |



| Sub-Matrix: WATER       |   |  |            |      |       | Laboratory I    | Duplicate (DUP) Report | t        |                     |
|-------------------------|---|--|------------|------|-------|-----------------|------------------------|----------|---------------------|
| Laboratory sample ID    | ID Client sample ID Method: Compound CAS Number |  |            |      | Unit  | Original Result | Duplicate Result       | RPD (%)  | Recovery Limits (%) |
| EP080: BTEXN (QC I      | _ot: 2062577) - continue                        | d  |            |      |       |                 |                        |          |                     |
| ES1835239-001           | QA200   | EP080: Naphthalene                             | 91-20-3    | 5    | µg/L  | <5              | <5                     | 0.00     | No Limit            |
| EP231A: Perfluoroal     | yl Sulfonic Acids (QC L                         | .ot: 2062581)                                  |            |      |       |                 |                        |          |                     |
| EM1818839-069           | Anonymous                                       | EP231X: Perfluorooctane sulfonic acid (PFOS)   | 1763-23-1  | 0.01 | µg/L  | <0.01           | <0.01                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorobutane sulfonic acid (PFBS)   | 375-73-5   | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4  | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorohexane sulfonic acid (PFHxS)  | 355-46-4   | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8   | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorodecane sulfonic acid (PFDS)   | 335-77-3   | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
| ES1835368-003           | Anonymous                                       | EP231X: Perfluorooctane sulfonic acid (PFOS)   | 1763-23-1  | 0.01 | µg/L  | 0.09            | 0.10                   | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorobutane sulfonic acid (PFBS)   | 375-73-5   | 0.02 | µg/L  | 0.08            | 0.07                   | 0.00     | No Limit            |
|                         |   | EP231X: Perfluoropentane sulfonic acid (PFPeS) | 2706-91-4  | 0.02 | µg/L  | 0.05            | 0.06                   | 20.6     | No Limit            |
|                         |   | EP231X: Perfluorohexane sulfonic acid (PFHxS)  | 355-46-4   | 0.02 | µg/L  | 1.10            | 1.09                   | 0.00     | 0% - 20%            |
|                         |   | EP231X: Perfluoroheptane sulfonic acid (PFHpS) | 375-92-8   | 0.02 | µg/L  | <0.02           | 0.02                   | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorodecane sulfonic acid (PFDS)   | 335-77-3   | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
| EP231B: Perfluoroal     | kyl Carboxylic Acids (Q                         | C Lot: 2062581)                                |            |      |       |                 |                        |          |                     |
| EM1818839-069 Anonymous | EP231X: Perfluorooctanoic acid (PFOA)           | 335-67-1                                       | 0.01       | µg/L | <0.01 | <0.01           | 0.00                   | No Limit |                     |
|                         |   | EP231X: Perfluoropentanoic acid (PFPeA)        | 2706-90-3  | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorohexanoic acid (PFHxA)         | 307-24-4   | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluoroheptanoic acid (PFHpA)        | 375-85-9   | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorononanoic acid (PFNA)          | 375-95-1   | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorodecanoic acid (PFDA)          | 335-76-2   | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluoroundecanoic acid (PFUnDA)      | 2058-94-8  | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorododecanoic acid (PFDoDA)      | 307-55-1   | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorotridecanoic acid (PFTrDA)     | 72629-94-8 | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorotetradecanoic acid (PFTeDA)   | 376-06-7   | 0.05 | µg/L  | <0.05           | <0.05                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorobutanoic acid (PFBA)          | 375-22-4   | 0.1  | µg/L  | <0.1            | <0.1                   | 0.00     | No Limit            |
| ES1835368-003           | Anonymous                                       | EP231X: Perfluorooctanoic acid (PFOA)          | 335-67-1   | 0.01 | µg/L  | 0.02            | 0.02                   | 0.00     | No Limit            |
|                         |   | EP231X: Perfluoropentanoic acid (PFPeA)        | 2706-90-3  | 0.02 | µg/L  | 0.03            | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorohexanoic acid (PFHxA)         | 307-24-4   | 0.02 | µg/L  | 0.16            | 0.16                   | 0.00     | No Limit            |
|                         |   | EP231X: Perfluoroheptanoic acid (PFHpA)        | 375-85-9   | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorononanoic acid (PFNA)          | 375-95-1   | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorodecanoic acid (PFDA)          | 335-76-2   | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluoroundecanoic acid (PFUnDA)      | 2058-94-8  | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorododecanoic acid (PFDoDA)      | 307-55-1   | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorotridecanoic acid (PFTrDA)     | 72629-94-8 | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorotetradecanoic acid (PFTeDA)   | 376-06-7   | 0.05 | µg/L  | <0.05           | <0.05                  | 0.00     | No Limit            |
|                         |   | EP231X: Perfluorobutanoic acid (PFBA)          | 375-22-4   | 0.1  | μg/L  | <0.1            | <0.1                   | 0.00     | No Limit            |
| EP231C: Perfluoroal     | yl Sulfonamides (QC Lo                          | ot: 2062581)                                   |            |      |       |                 |                        |          |                     |
| EM1818839-069           | Anonymous                                       | EP231X: Perfluorooctane sulfonamide (FOSA)     | 754-91-6   | 0.02 | µg/L  | <0.02           | <0.02                  | 0.00     | No Limit            |

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| Work Order | ES1835239                          |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : KYEEMAGH INFANTS SCHOOL 80818157 |



| Sub-Matrix: WATER       |   |  |             |      | Laboratory Duplicate (DUP) Report |                 |                  |          |                     |
|-------------------------|---|--|-------------|------|-----------------------------------|-----------------|------------------|----------|---------------------|
| Laboratory sample ID    | Client sample ID Method: Compound CAS Number                        |  |             |      | Unit                              | Original Result | Duplicate Result | RPD (%)  | Recovery Limits (%) |
| EP231C: Perfluoroa      | lkyl Sulfonamides (QC   | Lot: 2062581) - continued  |             |      |                                   |                 |                  |          |                     |
| EM1818839-069 Anonymous |   | EP231X: N-Methyl perfluorooctane<br>sulfonamidoacetic acid (MeFOSAA) | 2355-31-9   | 0.02 | µg/L                              | <0.02           | <0.02            | 0.00     | No Limit            |
|                         |   | EP231X: N-Ethyl perfluorooctane<br>sulfonamidoacetic acid (EtFOSAA)  | 2991-50-6   | 0.02 | µg/L                              | <0.02           | <0.02            | 0.00     | No Limit            |
|                         |   | EP231X: N-Methyl perfluorooctane sulfonamide<br>(MeFOSA)             | 31506-32-8  | 0.05 | µg/L                              | <0.05           | <0.05            | 0.00     | No Limit            |
|                         |   | EP231X: N-Ethyl perfluorooctane sulfonamide<br>(EtFOSA)              | 4151-50-2   | 0.05 | µg/L                              | <0.05           | <0.05            | 0.00     | No Limit            |
|                         |   | EP231X: N-Methyl perfluorooctane<br>sulfonamidoethanol (MeFOSE)      | 24448-09-7  | 0.05 | µg/L                              | <0.05           | <0.05            | 0.00     | No Limit            |
|                         |   | EP231X: N-Ethyl perfluorooctane<br>sulfonamidoethanol (EtFOSE)       | 1691-99-2   | 0.05 | µg/L                              | <0.05           | <0.05            | 0.00     | No Limit            |
| ES1835368-003           | Anonymous   | EP231X: Perfluorooctane sulfonamide (FOSA)                           | 754-91-6    | 0.02 | µg/L                              | <0.02           | <0.02            | 0.00     | No Limit            |
|                         |   | EP231X: N-Methyl perfluorooctane<br>sulfonamidoacetic acid (MeFOSAA) | 2355-31-9   | 0.02 | µg/L                              | <0.02           | <0.02            | 0.00     | No Limit            |
|                         | EP231X: N-Ethyl perfluorooctane<br>sulfonamidoacetic acid (EtFOSAA) | 2991-50-6  | 0.02        | µg/L | <0.02                             | <0.02           | 0.00             | No Limit |                     |
|                         |   | EP231X: N-Methyl perfluorooctane sulfonamide<br>(MeFOSA)             | 31506-32-8  | 0.05 | µg/L                              | <0.05           | <0.05            | 0.00     | No Limit            |
|                         |   | EP231X: N-Ethyl perfluorooctane sulfonamide<br>(EtFOSA)              | 4151-50-2   | 0.05 | µg/L                              | <0.05           | <0.05            | 0.00     | No Limit            |
|                         |   | EP231X: N-Methyl perfluorooctane<br>sulfonamidoethanol (MeFOSE)      | 24448-09-7  | 0.05 | µg/L                              | <0.05           | <0.05            | 0.00     | No Limit            |
|                         |   | EP231X: N-Ethyl perfluorooctane<br>sulfonamidoethanol (EtFOSE)       | 1691-99-2   | 0.05 | µg/L                              | <0.05           | <0.05            | 0.00     | No Limit            |
| EP231D: (n:2) Fluor     | rotelomer Sulfonic Acid   | ls (QC Lot: 2062581)   |             |      |                                   |                 |                  |          |                     |
| EM1818839-069           | Anonymous   | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2<br>FTS)                 | 757124-72-4 | 0.05 | µg/L                              | <0.05           | <0.05            | 0.00     | No Limit            |
|                         |   | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2<br>FTS)                 | 27619-97-2  | 0.05 | µg/L                              | <0.05           | <0.05            | 0.00     | No Limit            |
|                         |   | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2<br>FTS)                 | 39108-34-4  | 0.05 | µg/L                              | <0.05           | <0.05            | 0.00     | No Limit            |
|                         |   | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2<br>FTS)               | 120226-60-0 | 0.05 | µg/L                              | <0.05           | <0.05            | 0.00     | No Limit            |
| ES1835368-003           | Anonymous   | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2<br>FTS)                 | 757124-72-4 | 0.05 | µg/L                              | <0.05           | <0.05            | 0.00     | No Limit            |
|                         |   | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2<br>FTS)                 | 27619-97-2  | 0.05 | µg/L                              | <0.05           | <0.05            | 0.00     | No Limit            |
|                         |   | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2<br>FTS)                 | 39108-34-4  | 0.05 | µg/L                              | <0.05           | <0.05            | 0.00     | No Limit            |

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| Work Order | : ES1835239                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : KYEEMAGH INFANTS SCHOOL 80818157 |



| Sub-Matrix: WATER  |                   |  |             | Laboratory Duplicate (DUP) Report |      |                 |                  |         |                     |
|--|-------------------|--|-------------|-----------------------------------|------|-----------------|------------------|---------|---------------------|
| Laboratory sample ID   | Client sample ID  | Method: Compound                               | CAS Number  | LOR                               | Unit | Original Result | Duplicate Result | RPD (%) | Recovery Limits (%) |
| EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2062581) - continued |                   |  |             |                                   |      |                 |                  |         |                     |
| ES1835368-003  | Anonymous         | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 | 120226-60-0 | 0.05                              | µg/L | <0.05           | <0.05            | 0.00    | No Limit            |
|  |                   | FTS)   |             |                                   |      |                 |                  |         |                     |
| EP231P: PFAS Sums  | (QC Lot: 2062581) |  |             |                                   |      |                 |                  |         |                     |
| EM1818839-069  | Anonymous         | EP231X: Sum of PFAS                            |             | 0.01                              | µg/L | <0.01           | <0.01            | 0.00    | No Limit            |
| ES1835368-003  | Anonymous         | EP231X: Sum of PFAS                            |             | 0.01                              | µg/L | 1.53            | 1.52             | 0.656   | 0% - 20%            |



## Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

| Sub-Matrix: WATER                             |                |        |      | Method Blank (MB) | Laboratory Control Spike (LCS) Report |                    |          |            |
|---|----------------|--------|------|-------------------|---------------------------------------|--------------------|----------|------------|
|   |                |        |      | Report            | Spike                                 | Spike Recovery (%) | Recovery | Limits (%) |
| Method: Compound                              | CAS Number     | LOR    | Unit | Result            | Concentration                         | LCS                | Low      | High       |
| EG020F: Dissolved Metals by ICP-MS (QCLot: 20 | 061594)        |        |      |                   |                                       |                    |          |            |
| EG020A-F: Arsenic                             | 7440-38-2      | 0.001  | mg/L | <0.001            | 0.1 mg/L                              | 102                | 85       | 114        |
| EG020A-F: Cadmium                             | 7440-43-9      | 0.0001 | mg/L | <0.0001           | 0.1 mg/L                              | 99.8               | 84       | 110        |
| EG020A-F: Chromium                            | 7440-47-3      | 0.001  | mg/L | <0.001            | 0.1 mg/L                              | 101                | 85       | 111        |
| EG020A-F: Copper                              | 7440-50-8      | 0.001  | mg/L | <0.001            | 0.1 mg/L                              | 101                | 81       | 111        |
| EG020A-F: Lead                                | 7439-92-1      | 0.001  | mg/L | <0.001            | 0.1 mg/L                              | 98.3               | 83       | 111        |
| EG020A-F: Nickel                              | 7440-02-0      | 0.001  | mg/L | <0.001            | 0.1 mg/L                              | 101                | 82       | 112        |
| EG020A-F: Zinc                                | 7440-66-6      | 0.005  | mg/L | <0.005            | 0.1 mg/L                              | 102                | 81       | 117        |
| EG035F: Dissolved Mercury by FIMS (QCLot: 20  | 61595)         |        |      |                   |                                       |                    |          |            |
| EG035F: Mercury                               | 7439-97-6      | 0.0001 | mg/L | <0.0001           | 0.01 mg/L                             | 90.8               | 83       | 105        |
| EP074A: Monocyclic Aromatic Hydrocarbons (Q   | CLot: 2062578) |        |      |                   |                                       |                    |          |            |
| EP074: Styrene                                | 100-42-5       | 5      | µg/L | <5                | 10 µg/L                               | 92.9               | 73       | 119        |
| EP074: Isopropylbenzene                       | 98-82-8        | 5      | µg/L | <5                | 10 µg/L                               | 103                | 76       | 118        |
| EP074: n-Propylbenzene                        | 103-65-1       | 5      | µg/L | <5                | 10 µg/L                               | 99.6               | 69       | 119        |
| EP074: 1.3.5-Trimethylbenzene                 | 108-67-8       | 5      | µg/L | <5                | 10 µg/L                               | 98.9               | 74       | 116        |
| EP074: sec-Butylbenzene                       | 135-98-8       | 5      | µg/L | <5                | 10 µg/L                               | 102                | 73       | 119        |
| EP074: 1.2.4-Trimethylbenzene                 | 95-63-6        | 5      | μg/L | <5                | 10 µg/L                               | 97.2               | 74       | 116        |
| EP074: tert-Butylbenzene                      | 98-06-6        | 5      | μg/L | <5                | 10 µg/L                               | 101                | 72       | 116        |
| EP074: p-Isopropyltoluene                     | 99-87-6        | 5      | µg/L | <5                | 10 µg/L                               | 93.8               | 71       | 119        |
| EP074: n-Butylbenzene                         | 104-51-8       | 5      | μg/L | <5                | 10 µg/L                               | 98.6               | 65       | 123        |
| EP074B: Oxygenated Compounds (QCLot: 2062     | 578)           |        |      |                   |                                       |                    |          |            |
| EP074: Vinyl Acetate                          | 108-05-4       | 50     | µg/L | <50               | 100 µg/L                              | 87.7               | 61       | 134        |
| EP074: 2-Butanone (MEK)                       | 78-93-3        | 50     | μg/L | <50               | 100 µg/L                              | 102                | 74       | 130        |
| EP074: 4-Methyl-2-pentanone (MIBK)            | 108-10-1       | 50     | µg/L | <50               | 100 µg/L                              | 100                | 66       | 132        |
| EP074: 2-Hexanone (MBK)                       | 591-78-6       | 50     | μg/L | <50               | 100 µg/L                              | 99.8               | 65       | 137        |
| EP074C: Sulfonated Compounds (QCLot: 20625    | 78)            |        |      |                   |                                       |                    |          |            |
| EP074: Carbon disulfide                       | 75-15-0        | 5      | μg/L | <5                | 10 µg/L                               | 95.6               | 73       | 127        |
| EP074D: Fumigants (QCLot: 2062578)            |                |        |      |                   |                                       |                    |          |            |
| EP074: 2.2-Dichloropropane                    | 594-20-7       | 5      | µg/L | <5                | 10 µg/L                               | 102                | 68       | 122        |
| EP074: 1.2-Dichloropropane                    | 78-87-5        | 5      | μg/L | <5                | 10 µg/L                               | 103                | 76       | 118        |
| EP074: cis-1.3-Dichloropropylene              | 10061-01-5     | 5      | μg/L | <5                | 10 µg/L                               | 97.8               | 62       | 120        |
| EP074: trans-1.3-Dichloropropylene            | 10061-02-6     | 5      | μg/L | <5                | 10 µg/L                               | 96.2               | 60       | 114        |
| EP074: 1.2-Dibromoethane (EDB)                | 106-93-4       | 5      | μg/L | <5                | 10 µg/L                               | 102                | 69       | 117        |
| EP074E: Halogenated Aliphatic Compounds (QC   | CLot: 2062578) |        |      |                   |                                       |                    |          |            |

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| Work Order | : ES1835239                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : KYEEMAGH INFANTS SCHOOL 80818157 |



| Sub-Matrix: WATER                            |                           |     |      | Method Blank (MB) | Laboratory Control Spike (LCS) Report |                    |          |            |  |
|--|---------------------------|-----|------|-------------------|---------------------------------------|--------------------|----------|------------|--|
|  |                           |     |      | Report            | Spike                                 | Spike Recovery (%) | Recovery | Limits (%) |  |
| Method: Compound                             | CAS Number                | LOR | Unit | Result            | Concentration                         | LCS                | Low      | High       |  |
| EP074E: Halogenated Aliphatic Compounds (QCI | Lot: 2062578) - continued |     |      |                   |                                       |                    |          |            |  |
| EP074: Dichlorodifluoromethane               | 75-71-8                   | 50  | µg/L | <50               | 100 µg/L                              | 92.9               | 61       | 138        |  |
| EP074: Chloromethane                         | 74-87-3                   | 50  | µg/L | <50               | 100 µg/L                              | 99.7               | 67       | 130        |  |
| EP074: Vinyl chloride                        | 75-01-4                   | 50  | µg/L | <50               | 100 µg/L                              | 104                | 69       | 129        |  |
| EP074: Bromomethane                          | 74-83-9                   | 50  | µg/L | <50               | 100 µg/L                              | 99.3               | 56       | 140        |  |
| EP074: Chloroethane                          | 75-00-3                   | 50  | µg/L | <50               | 100 µg/L                              | 100                | 61       | 139        |  |
| EP074: Trichlorofluoromethane                | 75-69-4                   | 50  | µg/L | <50               | 100 µg/L                              | 103                | 69       | 131        |  |
| EP074: 1.1-Dichloroethene                    | 75-35-4                   | 5   | µg/L | <5                | 10 µg/L                               | 103                | 70       | 124        |  |
| EP074: lodomethane                           | 74-88-4                   | 5   | µg/L | <5                | 10 µg/L                               | 71.6               | 70       | 128        |  |
| EP074: trans-1.2-Dichloroethene              | 156-60-5                  | 5   | µg/L | <5                | 10 µg/L                               | 105                | 74       | 118        |  |
| EP074: 1.1-Dichloroethane                    | 75-34-3                   | 5   | µg/L | <5                | 10 µg/L                               | 102                | 74       | 120        |  |
| EP074: cis-1.2-Dichloroethene                | 156-59-2                  | 5   | µg/L | <5                | 10 µg/L                               | 102                | 77       | 119        |  |
| EP074: 1.1.1-Trichloroethane                 | 71-55-6                   | 5   | µg/L | <5                | 10 µg/L                               | 105                | 67       | 119        |  |
| EP074: 1.1-Dichloropropylene                 | 563-58-6                  | 5   | µg/L | <5                | 10 µg/L                               | 103                | 73       | 119        |  |
| EP074: Carbon Tetrachloride                  | 56-23-5                   | 5   | µg/L | <5                | 10 µg/L                               | 102                | 62       | 120        |  |
| EP074: 1.2-Dichloroethane                    | 107-06-2                  | 5   | µg/L | <5                | 10 µg/L                               | 102                | 73       | 123        |  |
| EP074: Trichloroethene                       | 79-01-6                   | 5   | µg/L | <5                | 10 µg/L                               | 102                | 76       | 118        |  |
| EP074: Dibromomethane                        | 74-95-3                   | 5   | µg/L | <5                | 10 µg/L                               | 101                | 73       | 119        |  |
| EP074: 1.1.2-Trichloroethane                 | 79-00-5                   | 5   | µg/L | <5                | 10 µg/L                               | 99.4               | 72       | 126        |  |
| EP074: 1.3-Dichloropropane                   | 142-28-9                  | 5   | µg/L | <5                | 10 µg/L                               | 107                | 71       | 129        |  |
| EP074: Tetrachloroethene                     | 127-18-4                  | 5   | µg/L | <5                | 10 µg/L                               | 102                | 72       | 124        |  |
| EP074: 1.1.1.2-Tetrachloroethane             | 630-20-6                  | 5   | µg/L | <5                | 10 µg/L                               | 99.0               | 66       | 114        |  |
| EP074: trans-1.4-Dichloro-2-butene           | 110-57-6                  | 5   | µg/L | <5                | 10 µg/L                               | 86.7               | 60       | 120        |  |
| EP074: cis-1.4-Dichloro-2-butene             | 1476-11-5                 | 5   | µg/L | <5                | 10 µg/L                               | 94.9               | 71       | 128        |  |
| EP074: 1.1.2.2-Tetrachloroethane             | 79-34-5                   | 5   | µg/L | <5                | 10 µg/L                               | 101                | 70       | 124        |  |
| EP074: 1.2.3-Trichloropropane                | 96-18-4                   | 5   | µg/L | <5                | 10 µg/L                               | 101                | 74       | 126        |  |
| EP074: Pentachloroethane                     | 76-01-7                   | 5   | µg/L | <5                | 10 µg/L                               | 97.5               | 72       | 126        |  |
| EP074: 1.2-Dibromo-3-chloropropane           | 96-12-8                   | 5   | µg/L | <5                | 10 µg/L                               | 92.6               | 66       | 136        |  |
| EP074: Hexachlorobutadiene                   | 87-68-3                   | 5   | µg/L | <5                | 10 µg/L                               | 98.5               | 58       | 130        |  |
| EP074F: Halogenated Aromatic Compounds (QCI  | Lot: 2062578)             |     |      |                   |                                       |                    |          |            |  |
| EP074: Chlorobenzene                         | 108-90-7                  | 5   | µg/L | <5                | 10 µg/L                               | 103                | 79       | 117        |  |
| EP074: Bromobenzene                          | 108-86-1                  | 5   | µg/L | <5                | 10 µg/L                               | 99.9               | 76       | 116        |  |
| EP074: 2-Chlorotoluene                       | 95-49-8                   | 5   | µg/L | <5                | 10 µg/L                               | 101                | 73       | 119        |  |
| EP074: 4-Chlorotoluene                       | 106-43-4                  | 5   | µg/L | <5                | 10 µg/L                               | 100                | 73       | 119        |  |
| EP074: 1.3-Dichlorobenzene                   | 541-73-1                  | 5   | µg/L | <5                | 10 µg/L                               | 95.8               | 75       | 117        |  |
| EP074: 1.4-Dichlorobenzene                   | 106-46-7                  | 5   | µg/L | <5                | 10 µg/L                               | 98.5               | 74       | 118        |  |
| EP074: 1.2-Dichlorobenzene                   | 95-50-1                   | 5   | µg/L | <5                | 10 µg/L                               | 98.8               | 75       | 117        |  |
| EP074: 1.2.4-Trichlorobenzene                | 120-82-1                  | 5   | μg/L | <5                | 10 µg/L                               | 95.1               | 61       | 125        |  |
| EP074: 1.2.3-Trichlorobenzene                | 87-61-6                   | 5   | μg/L | <5                | 10 µg/L                               | 95.8               | 67       | 123        |  |
| EP074G: Tribalomethanes (OCI of: 2062578)    |                           |     |      |                   |                                       |                    |          |            |  |

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| Work Order | : ES1835239                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : KYEEMAGH INFANTS SCHOOL 80818157 |



| Sub-Matrix: WATER                                    |                      |              | Method Blank (MB) | Laboratory Control Spike (LCS) Report |               |                    |          |            |
|--|----------------------|--------------|-------------------|---------------------------------------|---------------|--------------------|----------|------------|
|  |                      |              |                   | Report                                | Spike         | Spike Recovery (%) | Recovery | Limits (%) |
| Method: Compound                                     | CAS Number           | LOR          | Unit              | Result                                | Concentration | LCS                | Low      | High       |
| EP074G: Trihalomethanes (QCLot: 2062578) - continued |                      |              |                   |                                       |               |                    |          |            |
| EP074: Chloroform                                    | 67-66-3              | 5            | µg/L              | <5                                    | 10 µg/L       | 103                | 72       | 120        |
| EP074: Bromodichloromethane                          | 75-27-4              | 5            | µg/L              | <5                                    | 10 µg/L       | 96.0               | 64       | 118        |
| EP074: Dibromochloromethane                          | 124-48-1             | 5            | µg/L              | <5                                    | 10 µg/L       | 93.2               | 65       | 115        |
| EP074: Bromoform                                     | 75-25-2              | 5            | µg/L              | <5                                    | 10 µg/L       | 89.0               | 74       | 126        |
| EP074H: Naphthalene (QCLot: 2062578)                 |                      |              |                   |                                       |               |                    |          |            |
| EP074: Naphthalene                                   | 91-20-3              | 5            | μg/L              | <5                                    | 10 µg/L       | 101                | 72       | 122        |
| EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (Q    | CLot: 2058890)       |              |                   |                                       |               |                    |          |            |
| EP075(SIM): Naphthalene                              | 91-20-3              | 1            | µg/L              | <1.0                                  | 5 μg/L        | 76.9               | 50       | 94         |
| EP075(SIM): Acenaphthylene                           | 208-96-8             | 1            | µg/L              | <1.0                                  | 5 µg/L        | 95.1               | 64       | 114        |
| EP075(SIM): Acenaphthene                             | 83-32-9              | 1            | µg/L              | <1.0                                  | 5 µg/L        | 93.7               | 62       | 113        |
| EP075(SIM): Fluorene                                 | 86-73-7              | 1            | µg/L              | <1.0                                  | 5 µg/L        | 87.5               | 64       | 115        |
| EP075(SIM): Phenanthrene                             | 85-01-8              | 1            | µg/L              | <1.0                                  | 5 µg/L        | 70.0               | 63       | 116        |
| EP075(SIM): Anthracene                               | 120-12-7             | 1            | µg/L              | <1.0                                  | 5 µg/L        | 86.7               | 64       | 116        |
| EP075(SIM): Fluoranthene                             | 206-44-0             | 1            | µg/L              | <1.0                                  | 5 µg/L        | 100.0              | 64       | 118        |
| EP075(SIM): Pyrene                                   | 129-00-0             | 1            | µg/L              | <1.0                                  | 5 µg/L        | 90.1               | 63       | 118        |
| EP075(SIM): Benz(a)anthracene                        | 56-55-3              | 1            | µg/L              | <1.0                                  | 5 µg/L        | 91.4               | 64       | 117        |
| EP075(SIM): Chrysene                                 | 218-01-9             | 1            | µg/L              | <1.0                                  | 5 μg/L        | 5 μg/L 93.1        |          | 116        |
| EP075(SIM): Benzo(b+j)fluoranthene                   | 205-99-2<br>205-82-3 | 1            | μg/L              | <1.0                                  | 5 µg/L        | 73.6               | 62       | 119        |
| EP075(SIM): Benzo(k)fluoranthene                     | 207-08-9             | 1            | µg/L              | <1.0                                  | 5 µg/L        | 94.0               | 63       | 115        |
| EP075(SIM): Benzo(a)pyrene                           | 50-32-8              | 0.5          | µg/L              | <0.5                                  | 5 µg/L        | 83.0               | 63       | 117        |
| EP075(SIM): Indeno(1.2.3.cd)pyrene                   | 193-39-5             | 1            | µg/L              | <1.0                                  | 5 μg/L        | 78.4               | 60       | 118        |
| EP075(SIM): Dibenz(a.h)anthracene                    | 53-70-3              | 1            | µg/L              | <1.0                                  | 5 μg/L        | 85.7               | 61       | 117        |
| EP075(SIM): Benzo(g.h.i)perylene                     | 191-24-2             | 1            | µg/L              | <1.0                                  | 5 μg/L        | 84.5               | 59       | 118        |
| EP080/071: Total Petroleum Hydrocarbons (QCLot: 20   | 58891)               |              |                   |                                       |               |                    |          |            |
| EP071: C10 - C14 Fraction                            |                      | 50           | µg/L              | <50                                   | 2000 µg/L     | 89.8               | 76       | 116        |
| EP071: C15 - C28 Fraction                            |                      | 100          | µg/L              | <100                                  | 3000 µg/L     | 100                | 83       | 109        |
| EP071: C29 - C36 Fraction                            |                      | 50           | µg/L              | <50                                   | 2000 µg/L     | 85.9               | 75       | 113        |
| EP080/071: Total Petroleum Hydrocarbons (QCLot: 20   | 62577)               |              |                   |                                       |               |                    |          |            |
| EP080: C6 - C9 Fraction                              |                      | 20           | µg/L              | <20                                   | 260 µg/L      | 82.6               | 75       | 127        |
| EP080/071: Total Recoverable Hydrocarbons - NEPM 2   | 013 Fractions (QCLo  | ot: 2058891) |                   |                                       |               |                    |          |            |
| EP071: >C10 - C16 Fraction                           |                      | 100          | µg/L              | <100                                  | 2500 μg/L     | 94.0               | 76       | 114        |
| EP071: >C16 - C34 Fraction                           |                      | 100          | µg/L              | <100                                  | 3500 µg/L     | 87.3               | 81       | 111        |
| EP071: >C34 - C40 Fraction                           |                      | 100          | µg/L              | <100                                  | 1500 µg/L     | 103                | 77       | 119        |
| EP080/071: Total Recoverable Hydrocarbons - NEPM 2   | 013 Fractions (QCLo  | ot: 2062577) |                   |                                       |               |                    |          |            |
| EP080: C6 - C10 Fraction                             | C6_C10               | 20           | µg/L              | <20                                   | 310 µg/L      | 87.5               | 75       | 127        |
| EP080: BTEXN (QCLot: 2062577)                        |                      |              |                   |                                       |               |                    |          |            |
| EP080: Benzene                                       | 71-43-2              | 1            | µg/L              | <1                                    | 10 µg/L       | 93.1               | 70       | 122        |

| Page       | : 13 of 16                         |
|------------|------------------------------------|
| Work Order | : ES1835239                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : KYEEMAGH INFANTS SCHOOL 80818157 |



| Sub-Matrix: WATER  |             |      | Method Blank (MB) | Laboratory Control Spike (LCS) Report |               |                    |                            |      |  |
|--|-------------|------|-------------------|---------------------------------------|---------------|--------------------|----------------------------|------|--|
|  |             |      |                   | Report                                | Spike         | Spike Recovery (%) | ry (%) Recovery Limits (%) |      |  |
| Method: Compound   | CAS Number  | LOR  | Unit              | Result                                | Concentration | LCS                | Low                        | High |  |
| EP080: BTEXN (QCLot: 2062577) - continued                            |             |      |                   |                                       |               |                    |                            |      |  |
| EP080: Toluene   | 108-88-3    | 2    | µg/L              | <2                                    | 10 µg/L       | 87.4               | 69                         | 123  |  |
| EP080: Ethylbenzene  | 100-41-4    | 2    | µg/L              | <2                                    | 10 µg/L       | 88.2               | 70                         | 120  |  |
| EP080: meta- & para-Xylene   | 108-38-3    | 2    | µg/L              | <2                                    | 10 µg/L       | 87.1               | 69                         | 121  |  |
|  | 106-42-3    |      |                   |                                       |               |                    |                            |      |  |
| EP080: ortho-Xylene  | 95-47-6     | 2    | µg/L              | <2                                    | 10 µg/L       | 91.4               | 72                         | 122  |  |
| EP080: Naphthalene   | 91-20-3     | 5    | µg/L              | <5                                    | 10 µg/L       | 96.8               | 70                         | 120  |  |
| EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 20625                  | 81)         |      |                   |                                       |               |                    |                            |      |  |
| EP231X: Perfluorobutane sulfonic acid (PFBS)                         | 375-73-5    | 0.02 | µg/L              | <0.02                                 | 0.5 µg/L      | 90.2               | 70                         | 130  |  |
| EP231X: Perfluoropentane sulfonic acid (PFPeS)                       | 2706-91-4   | 0.02 | µg/L              | <0.02                                 | 0.5 µg/L      | 97.4               | 70                         | 130  |  |
| EP231X: Perfluorohexane sulfonic acid (PFHxS)                        | 355-46-4    | 0.02 | µg/L              | <0.02                                 | 0.5 µg/L      | 103                | 70                         | 130  |  |
| EP231X: Perfluoroheptane sulfonic acid (PFHpS)                       | 375-92-8    | 0.02 | µg/L              | <0.02                                 | 0.5 µg/L      | 107                | 70                         | 130  |  |
| EP231X: Perfluorooctane sulfonic acid (PFOS)                         | 1763-23-1   | 0.01 | µg/L              | <0.01                                 | 0.5 µg/L      | 102                | 70                         | 130  |  |
| EP231X: Perfluorodecane sulfonic acid (PFDS)                         | 335-77-3    | 0.02 | µg/L              | <0.02                                 | 0.5 µg/L      | 104                | 70                         | 130  |  |
| EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 206                  | 2581)       |      |                   |                                       |               |                    |                            |      |  |
| EP231X: Perfluorobutanoic acid (PFBA)                                | 375-22-4    | 0.1  | µg/L              | <0.1                                  | 2.5 μg/L      | 103                | 70                         | 130  |  |
| EP231X: Perfluoropentanoic acid (PFPeA)                              | 2706-90-3   | 0.02 | µg/L              | <0.02                                 | 0.5 µg/L      | 103                | 70                         | 130  |  |
| EP231X: Perfluorohexanoic acid (PFHxA)                               | 307-24-4    | 0.02 | µg/L              | <0.02                                 | 0.5 µg/L      | 112                | 70                         | 130  |  |
| EP231X: Perfluoroheptanoic acid (PFHpA)                              | 375-85-9    | 0.02 | µg/L              | <0.02                                 | 0.5 µg/L      | 119                | 70                         | 130  |  |
| EP231X: Perfluorooctanoic acid (PFOA)                                | 335-67-1    | 0.01 | µg/L              | <0.01                                 | 0.5 µg/L      | 111                | 70                         | 130  |  |
| EP231X: Perfluorononanoic acid (PFNA)                                | 375-95-1    | 0.02 | µg/L              | <0.02                                 | 0.5 µg/L      | 110                | 70                         | 130  |  |
| EP231X: Perfluorodecanoic acid (PFDA)                                | 335-76-2    | 0.02 | µg/L              | <0.02                                 | 0.5 µg/L      | 110                | 70                         | 130  |  |
| EP231X: Perfluoroundecanoic acid (PFUnDA)                            | 2058-94-8   | 0.02 | µg/L              | <0.02                                 | 0.5 µg/L      | 113                | 70                         | 130  |  |
| EP231X: Perfluorododecanoic acid (PFDoDA)                            | 307-55-1    | 0.02 | µg/L              | <0.02                                 | 0.5 µg/L      | 113                | 70                         | 130  |  |
| EP231X: Perfluorotridecanoic acid (PFTrDA)                           | 72629-94-8  | 0.02 | µg/L              | <0.02                                 | 0.5 µg/L      | 101                | 70                         | 130  |  |
| EP231X: Perfluorotetradecanoic acid (PFTeDA)                         | 376-06-7    | 0.05 | µg/L              | <0.05                                 | 1.25 µg/L     | 110                | 70                         | 150  |  |
| EP231C: Perfluoroalkyl Sulfonamides (QCLot: 206258                   | 1)          |      |                   |                                       |               |                    |                            |      |  |
| EP231X: Perfluorooctane sulfonamide (FOSA)                           | 754-91-6    | 0.02 | µg/L              | <0.02                                 | 0.5 µg/L      | 96.0               | 70                         | 130  |  |
| EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)                | 31506-32-8  | 0.05 | µg/L              | <0.05                                 | 1.25 µg/L     | 118                | 70                         | 150  |  |
| EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)                 | 4151-50-2   | 0.05 | µg/L              | <0.05                                 | 1.25 μg/L     | 112                | 70                         | 150  |  |
| EP231X: N-Methyl perfluorooctane sulfonamidoethanol<br>(MeFOSE)      | 24448-09-7  | 0.05 | µg/L              | <0.05                                 | 1.25 μg/L     | 114                | 70                         | 150  |  |
| EP231X: N-Ethyl perfluorooctane sulfonamidoethanol<br>(EtFOSE)       | 1691-99-2   | 0.05 | µg/L              | <0.05                                 | 1.25 μg/L     | 114                | 70                         | 150  |  |
| EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid<br>(MeFOSAA) | 2355-31-9   | 0.02 | µg/L              | <0.02                                 | 0.5 µg/L      | 99.2               | 70                         | 130  |  |
| EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid<br>(EtFOSAA)  | 2991-50-6   | 0.02 | µg/L              | <0.02                                 | 0.5 µg/L      | 106                | 70                         | 130  |  |
| EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2062581)          |             |      |                   |                                       |               |                    |                            |      |  |
| EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)                    | 757124-72-4 | 0.05 | μg/L              | <0.05                                 | 0.5 μg/L      | 114                | 70                         | 130  |  |



| Sub-Matrix: WATER                                   |                      |      | Method Blank (MB) | Laboratory Control Spike (LCS) Report |                    |                     |     |      |
|---|----------------------|------|-------------------|---------------------------------------|--------------------|---------------------|-----|------|
|   |                      |      | Report            | Spike                                 | Spike Recovery (%) | Recovery Limits (%) |     |      |
| Method: Compound                                    | CAS Number           | LOR  | Unit              | Result                                | Concentration      | LCS                 | Low | High |
| EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot   | : 2062581) - continu | ed   |                   |                                       |                    |                     |     |      |
| EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)   | 27619-97-2           | 0.05 | μg/L              | <0.05                                 | 0.5 µg/L           | 107                 | 70  | 130  |
| EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)   | 39108-34-4           | 0.05 | μg/L              | <0.05                                 | 0.5 µg/L           | 119                 | 70  | 130  |
| EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS) | 120226-60-0          | 0.05 | µg/L              | <0.05                                 | 0.5 µg/L           | 94.2                | 70  | 130  |

# Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

| Sub-Matrix: WATER    |  |                           |            | Matrix Spike (MS) Report            |      |     |          |  |
|----------------------|--|---------------------------|------------|-------------------------------------|------|-----|----------|--|
|                      |  |                           |            | Spike SpikeRecovery(%) Recovery Lin |      |     | mits (%) |  |
| Laboratory sample ID | Client sample ID                                 | Method: Compound          | CAS Number | Concentration                       | MS   | Low | High     |  |
| EG020F: Dissolved    | Metals by ICP-MS (QCLot: 2061594)                |                           |            |                                     |      |     |          |  |
| ES1835326-001        | Anonymous  | EG020A-F: Arsenic         | 7440-38-2  | 1 mg/L                              | 106  | 70  | 130      |  |
|                      |  | EG020A-F: Cadmium         | 7440-43-9  | 0.25 mg/L                           | 105  | 70  | 130      |  |
|                      |  | EG020A-F: Chromium        | 7440-47-3  | 1 mg/L                              | 107  | 70  | 130      |  |
|                      |  | EG020A-F: Copper          | 7440-50-8  | 1 mg/L                              | 104  | 70  | 130      |  |
|                      |  | EG020A-F: Lead            | 7439-92-1  | 1 mg/L                              | 104  | 70  | 130      |  |
|                      |  | EG020A-F: Nickel          | 7440-02-0  | 1 mg/L                              | 106  | 70  | 130      |  |
|                      |  | EG020A-F: Zinc            | 7440-66-6  | 1 mg/L                              | 107  | 70  | 130      |  |
| EG035F: Dissolved    | Mercury by FIMS (QCLot: 2061595)                 |                           |            |                                     |      |     |          |  |
| ES1835239-001        | QA200  | EG035F: Mercury           | 7439-97-6  | 0.01 mg/L                           | 87.6 | 70  | 130      |  |
| EP074E: Halogena     | ted Aliphatic Compounds (QCLot: 2062578)         |                           |            |                                     |      |     |          |  |
| ES1835239-001        | QA200  | EP074: 1.1-Dichloroethene | 75-35-4    | 25 µg/L                             | 117  | 70  | 130      |  |
|                      |  | EP074: Trichloroethene    | 79-01-6    | 25 µg/L                             | 98.7 | 70  | 130      |  |
| EP074F: Halogena     | ted Aromatic Compounds (QCLot: 2062578)          |                           |            |                                     |      |     |          |  |
| ES1835239-001        | QA200  | EP074: Chlorobenzene      | 108-90-7   | 25 µg/L                             | 97.7 | 70  | 130      |  |
| EP075(SIM)B: Poly    | nuclear Aromatic Hydrocarbons (QCLot: 2058890)   |                           |            |                                     |      |     |          |  |
| ES1835207-004        | Anonymous  | EP075(SIM): Acenaphthene  | 83-32-9    | 20 µg/L                             | 77.0 | 70  | 130      |  |
|                      |  | EP075(SIM): Pyrene        | 129-00-0   | 20 µg/L                             | 87.5 | 70  | 130      |  |
| EP080/071: Total P   | etroleum Hydrocarbons (QCLot: 2058891)           |                           |            |                                     |      |     |          |  |
| ES1835207-004        | Anonymous  | EP071: C10 - C14 Fraction |            | 200 µg/L                            | 109  | 74  | 150      |  |
|                      |  | EP071: C15 - C28 Fraction |            | 300 µg/L                            | 114  | 77  | 153      |  |
|                      |  | EP071: C29 - C36 Fraction |            | 200 µg/L                            | 123  | 67  | 153      |  |
| EP080/071: Total P   | etroleum Hydrocarbons (QCLot: 2062577)           |                           |            |                                     |      |     |          |  |
| ES1835239-001        | QA200  | EP080: C6 - C9 Fraction   |            | 325 µg/L                            | 98.3 | 70  | 130      |  |
| EP080/071: Total R   | ecoverable Hydrocarbons - NEPM 2013 Fractions(QC | Lot: 2058891)             |            |                                     |      |     |          |  |
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|------------|------------------------------------|
| Work Order | : ES1835239                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : KYEEMAGH INFANTS SCHOOL 80818157 |



| Sub-Matrix: WATER    |   |  |            |               | Matrix Spike (MS) Report |            |           |  |  |  |
|----------------------|---|--|------------|---------------|--------------------------|------------|-----------|--|--|--|
|                      |   |  |            | Spike         | SpikeRecovery(%)         | Recovery L | imits (%) |  |  |  |
| Laboratory sample ID | Client sample ID                                  | Method: Compound                                     | CAS Number | Concentration | MS                       | Low        | High      |  |  |  |
| EP080/071: Total R   | ecoverable Hydrocarbons - NEPM 2013 Fractions (QC | Lot: 2058891) - continued                            |            |               |                          |            |           |  |  |  |
| ES1835207-004        | Anonymous   | EP071: >C10 - C16 Fraction                           |            | 250 µg/L      | 110                      | 74         | 150       |  |  |  |
|                      |   | EP071: >C16 - C34 Fraction                           |            | 350 µg/L      | 109                      | 77         | 153       |  |  |  |
|                      |   | EP071: >C34 - C40 Fraction                           |            | 150 µg/L      | 111                      | 67         | 153       |  |  |  |
| EP080/071: Total R   | ecoverable Hydrocarbons - NEPM 2013 Fractions(QC  | Lot: 2062577)  |            |               |                          |            |           |  |  |  |
| ES1835239-001        | QA200   | EP080: C6 - C10 Fraction                             | C6_C10     | 375 μg/L      | 111                      | 70         | 130       |  |  |  |
| EP080: BTEXN (Q      | CLot: 2062577)                                    |  |            |               |                          |            |           |  |  |  |
| ES1835239-001        | QA200   | FP080: Benzene                                       | 71-43-2    | 25 µa/L       | 106                      | 70         | 130       |  |  |  |
| 201000200 001        |   | EP080: Toluene                                       | 108-88-3   | 25 µg/l       | 95.8                     | 70         | 130       |  |  |  |
|                      |   | EP080: Ethylbenzene                                  | 100-41-4   | 25 µg/L       | 95.2                     | 70         | 130       |  |  |  |
|                      |   | EP080: meta- & para-Xvlene                           | 108-38-3   | 25 µg/L       | 93.9                     | 70         | 130       |  |  |  |
|                      |   |  | 106-42-3   |               |                          |            |           |  |  |  |
|                      |   | EP080: ortho-Xvlene                                  | 95-47-6    | 25 µg/L       | 97.2                     | 70         | 130       |  |  |  |
|                      |   | EP080: Naphthalene                                   | 91-20-3    | 25 µg/L       | 91.8                     | 70         | 130       |  |  |  |
| EP231A: Perfluoro    | alkyl Sulfonic Acids (QCLot: 2062581)             |  |            |               |                          |            |           |  |  |  |
| EM1818839-069        | Anonymous   | EP231X: Perfluorobutane sulfonic acid (PEBS)         | 375-73-5   | 0.5 µg/L      | 80.6                     | 50         | 130       |  |  |  |
|                      |   | EP231X: Perfluoropentane sulfonic acid (PEPeS)       | 2706-91-4  | 0.5 µg/L      | 93.0                     | 50         | 130       |  |  |  |
|                      |   | EP231X: Perfluorobexane sulfonic acid (PEHxS)        | 355-46-4   | 0.5 µg/L      | 110                      | 50         | 130       |  |  |  |
|                      |   | EP231X: Perfluorobentane sulfonic acid (PEHpS)       | 375-92-8   | 0.5 µg/L      | 102                      | 50         | 130       |  |  |  |
|                      |   | EP231X: Perfluorooctane sulfonic acid (PEQS)         | 1763-23-1  | 0.5 µg/L      | 95.4                     | 50         | 130       |  |  |  |
|                      |   | EP231X: Perfluorodecane sulfonic acid (PEDS)         | 335-77-3   | 0.5 µg/L      | 97.8                     | 50         | 130       |  |  |  |
| EP231B: Perfluoro    | alkyl Carboxylic Acids (QCLot: 2062581)           |  |            |               |                          |            |           |  |  |  |
| EM1818839-069        | Anonymous   | EP231X: Perfluorobutanoic acid (PEBA)                | 375-22-4   | 2.5 µg/l      | 97.8                     | 50         | 130       |  |  |  |
|                      |   | EP231X: Perfluoropentanoic acid (PEPeA)              | 2706-90-3  | 0.5 µg/L      | 103                      | 50         | 130       |  |  |  |
|                      |   | EP231X: Perfluorobevanoic acid (PEHxA)               | 307-24-4   | 0.5 µg/L      | 96.4                     | 50         | 130       |  |  |  |
|                      |   | EP231X: Perfluorohentanoic acid (PEHnA)              | 375-85-9   | 0.5 µg/L      | 114                      | 50         | 130       |  |  |  |
|                      |   | EP231X: Perfluorooctanoic acid (PEOA)                | 335-67-1   | 0.5 µg/L      | 102                      | 50         | 130       |  |  |  |
|                      |   | EP231X: Perfluorononanoic acid (PENA)                | 375-95-1   | 0.5 µg/L      | 110                      | 50         | 130       |  |  |  |
|                      |   | EP231X: Perfluorodecanoic acid (PEDA)                | 335-76-2   | 0.5 µg/L      | 93.6                     | 50         | 130       |  |  |  |
|                      |   | EP231X: Perfluoroundecanoic acid (PEUnDA)            | 2058-94-8  | 0.5 µg/L      | 108                      | 50         | 130       |  |  |  |
|                      |   | EP231X: Perfluorododecanoic acid (PEDoDA)            | 307-55-1   | 0.5 µg/L      | 98.6                     | 50         | 130       |  |  |  |
|                      |   | EP231X: Perfluorotridecanoic acid (PETrDA)           | 72629-94-8 | 0.5 µg/L      | 88.8                     | 50         | 130       |  |  |  |
|                      |   | EP231X: Perfluorotetradecanoic acid (PETeDA)         | 376-06-7   | 1.25 µg/L     | 105                      | 50         | 150       |  |  |  |
| EP231C: Perfluoro    | alkvl Sulfonamides (QCLot: 2062581)               |  |            |               |                          |            |           |  |  |  |
| EM1818839-069        | Anonymous   | EP231X: Perfluorooctane sulfonamide (FOSA)           | 754-91-6   | 0.5 µg/L      | 82.2                     | 50         | 130       |  |  |  |
|                      |   | EP231X: N-Methyl perfluorooctane sulfonamide         | 31506-32-8 | 1.25 µg/L     | 107                      | 50         | 150       |  |  |  |
|                      |   | (MeFOSA)   |            |               |                          |            |           |  |  |  |
|                      |   | EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA) | 4151-50-2  | 1.25 µg/L     | 103                      | 50         | 150       |  |  |  |

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|------------|------------------------------------|
| Work Order | : ES1835239                        |
| Client     | : CARDNO (NSW/ACT) PTY LTD         |
| Project    | : KYEEMAGH INFANTS SCHOOL 80818157 |



| Sub-Matrix: WATER    |   | Matrix Spike (MS) Report   |             |               |                  |            |           |
|----------------------|---|--|-------------|---------------|------------------|------------|-----------|
|                      |   |  |             | Spike         | SpikeRecovery(%) | Recovery L | imits (%) |
| Laboratory sample ID | Client sample ID                                | Method: Compound   | CAS Number  | Concentration | MS               | Low        | High      |
| EP231C: Perfluoro    | alkyl Sulfonamides (QCLot: 2062581) - continued |  |             |               |                  |            |           |
| EM1818839-069        | Anonymous                                       | EP231X: N-Methyl perfluorooctane sulfonamidoethanol<br>(MeFOSE)      | 24448-09-7  | 1.25 µg/L     | 114              | 50         | 150       |
|                      |   | EP231X: N-Ethyl perfluorooctane sulfonamidoethanol<br>(EtFOSE)       | 1691-99-2   | 1.25 µg/L     | 118              | 50         | 150       |
|                      |   | EP231X: N-Methyl perfluorooctane sulfonamidoacetic<br>acid (MeFOSAA) | 2355-31-9   | 0.5 µg/L      | 97.4             | 50         | 130       |
|                      |   | EP231X: N-Ethyl perfluorooctane sulfonamidoacetic<br>acid (EtFOSAA)  | 2991-50-6   | 0.5 µg/L      | 81.8             | 50         | 130       |
| EP231D: (n:2) Fluc   | protelomer Sulfonic Acids (QCLot: 2062581)      |  |             |               |                  |            |           |
| EM1818839-069        | Anonymous                                       | EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)                    | 757124-72-4 | 0.5 µg/L      | 117              | 50         | 130       |
|                      |   | EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)                    | 27619-97-2  | 0.5 µg/L      | 104              | 50         | 130       |
|                      |   | EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)                    | 39108-34-4  | 0.5 µg/L      | 115              | 50         | 130       |
|                      |   | EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)                  | 120226-60-0 | 0.5 μg/L      | 90.0             | 50         | 130       |



| QA/QC Compliance Assessment to assist with Quality Review |                                    |                         |                                 |  |  |  |  |
|---|------------------------------------|-------------------------|---------------------------------|--|--|--|--|
| Work Order  | ES1835239                          | Page                    | : 1 of 6                        |  |  |  |  |
| Client  | : CARDNO (NSW/ACT) PTY LTD         | Laboratory              | : Environmental Division Sydney |  |  |  |  |
| Contact   | : MR BEN WITHNALL                  | Telephone               | : +61-2-8784 8555               |  |  |  |  |
| Project   | : KYEEMAGH INFANTS SCHOOL 80818157 | Date Samples Received   | : 26-Nov-2018                   |  |  |  |  |
| Site  | :                                  | Issue Date              | : 03-Dec-2018                   |  |  |  |  |
| Sampler   | : JOEL GRIFFITHS                   | No. of samples received | : 1                             |  |  |  |  |
| Order number  | :                                  | No. of samples analysed | : 1                             |  |  |  |  |

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### **Outliers : Quality Control Samples**

This report highlights outliers flagged in the Quality Control (QC) Report.

- <u>NO</u> Method Blank value outliers occur.
- <u>NO</u> Duplicate outliers occur.
- <u>NO</u> Laboratory Control outliers occur.
- <u>NO</u> Matrix Spike outliers occur.
- For all regular sample matrices, <u>NO</u> surrogate recovery outliers occur.

#### **Outliers : Analysis Holding Time Compliance**

• NO Analysis Holding Time Outliers exist.

#### **Outliers : Frequency of Quality Control Samples**

• <u>NO</u> Quality Control Sample Frequency Outliers exist.



### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for <u>VOC in soils</u> vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive <u>or</u> Vinyl Chloride and Styrene are not key analytes of interest/concern.

| Matrix: WATER   |              |                          |                    | Evaluation | n: 🗴 = Holding time | breach ; 🗸 = Withi | in holding time.      |
|---|--------------|--------------------------|--------------------|------------|---------------------|--------------------|-----------------------|
| Method  | Sample Date  | Extraction / Preparation |                    |            |                     |                    |                       |
| Container / Client Sample ID(s)                         |              | Date extracted           | Due for extraction | Evaluation | Date analysed       | Due for analysis   | Evaluation            |
| EG020F: Dissolved Metals by ICP-MS                      |              |                          |                    |            |                     |                    |                       |
| Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) |              |                          |                    |            |                     |                    |                       |
| QA200   | 23-Nov-2018  |                          |                    |            | 28-Nov-2018         | 22-May-2019        | ✓                     |
| EG035F: Dissolved Mercury by FIMS                       |              |                          |                    |            |                     |                    |                       |
| Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)   |              |                          |                    |            |                     | 04 D + 0040        |                       |
| QA200   | 23-Nov-2018  |                          |                    |            | 29-Nov-2018         | 21-Dec-2018        | ✓                     |
| EP074A: Monocyclic Aromatic Hydrocarbons                |              |                          |                    |            |                     |                    |                       |
| Clear glass VOC vial - HCI (EP074)                      | 23 Nov 2018  | 29 Nov 2018              | 07 Dec 2018        | ,          | 29 Nov 2018         | 07 Dec 2018        |                       |
| QA200   | 23-1404-2018 | 23-1100-2018             | 07-Dec-2018        | ~          | 29-1100-2018        | 07-Dec-2010        | <b>√</b>              |
| EP074B: Oxygenated Compounds                            |              |                          |                    |            |                     |                    |                       |
| Clear glass VOC vial - HCI (EP074)                      | 23-Nov-2018  | 29-Nov-2018              | 07-Dec-2018        |            | 29-Nov-2018         | 07-Dec-2018        |                       |
|   |              |                          |                    | •          |                     |                    |                       |
| EP0/4C: Sulfonated Compounds                            |              |                          |                    |            |                     |                    |                       |
| QA200   | 23-Nov-2018  | 29-Nov-2018              | 07-Dec-2018        | 1          | 29-Nov-2018         | 07-Dec-2018        | <ul> <li>✓</li> </ul> |
| EP074D: Fumigants                                       |              |                          |                    |            |                     |                    |                       |
| Clear glass VOC vial - HCI (EP074)                      |              |                          |                    |            |                     |                    |                       |
| QA200   | 23-Nov-2018  | 29-Nov-2018              | 07-Dec-2018        | ✓          | 29-Nov-2018         | 07-Dec-2018        | $\checkmark$          |
| EP074E: Halogenated Aliphatic Compounds                 |              |                          |                    |            |                     |                    |                       |
| Clear glass VOC vial - HCI (EP074)                      |              |                          | 07 5 0040          |            |                     | 07 5 0010          |                       |
| QA200   | 23-Nov-2018  | 29-Nov-2018              | 07-Dec-2018        | ~          | 29-Nov-2018         | 07-Dec-2018        | <ul> <li>✓</li> </ul> |
| EP074F: Halogenated Aromatic Compounds                  |              |                          |                    |            |                     |                    |                       |
| Clear glass VOC vial - HCI (EP074)                      | 22 Nov 2018  | 20 Nov 2019              | 07 Dec 2019        | ,          | 20 Nov 2018         | 07 Dec 2019        |                       |
| QA200   | 23-NOV-2016  | 29-NOV-2018              | 07-Dec-2018        | ~          | 29-100-2016         | 07-Dec-2018        | ✓                     |
| EP074G: Trihalomethanes                                 | <u></u>      |                          |                    |            |                     |                    |                       |
| Clear glass VUC vial - HCI (EP074)                      | 23-Nov-2018  | 29-Nov-2018              | 07-Dec-2018        |            | 29-Nov-2018         | 07-Dec-2018        |                       |
|   | 23 1107 2010 | 13 1101 1010             | 51 200 2010        | v          | 201101 2010         | 07 200 2010        | v                     |
|   |              |                          |                    |            |                     |                    |                       |
| QA200   | 23-Nov-2018  | 29-Nov-2018              | 07-Dec-2018        | 1          | 29-Nov-2018         | 07-Dec-2018        | 1                     |
|   | -            |                          | -                  | -          | 1                   | -                  |                       |



| Matrix: WATER   |             |                |                    | Evaluation | n: × = Holding time | breach ; ✓ = Withi | in holding time.      |
|---|-------------|----------------|--------------------|------------|---------------------|--------------------|-----------------------|
| Method  | Sample Date |                |                    |            | Analysis            |                    |                       |
| Container / Client Sample ID(s)                                 |             | Date extracted | Due for extraction | Evaluation | Date analysed       | Due for analysis   | Evaluation            |
| EP075(SIM)B: Polynuclear Aromatic Hydrocarbons                  |             |                |                    |            |                     |                    |                       |
| Amber Glass Bottle - Unpreserved (EP075(SIM))                   |             |                |                    |            |                     |                    |                       |
| QA200   | 23-Nov-2018 | 27-Nov-2018    | 30-Nov-2018        | ✓          | 29-Nov-2018         | 06-Jan-2019        | ✓                     |
| EP080/071: Total Petroleum Hydrocarbons                         |             |                |                    |            |                     |                    |                       |
| Amber Glass Bottle - Unpreserved (EP071)                        |             |                |                    |            |                     |                    |                       |
| QA200   | 23-Nov-2018 | 27-Nov-2018    | 30-Nov-2018        | ✓          | 28-Nov-2018         | 06-Jan-2019        | ✓                     |
| Clear glass VOC vial - HCI (EP080)                              |             |                |                    |            |                     |                    |                       |
| QA200   | 23-Nov-2018 | 29-Nov-2018    | 07-Dec-2018        | <u>√</u>   | 29-Nov-2018         | 07-Dec-2018        | ✓                     |
| EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions |             |                |                    |            |                     |                    |                       |
| Amber Glass Bottle - Unpreserved (EP071)                        |             |                |                    |            |                     |                    |                       |
| QA200   | 23-Nov-2018 | 27-Nov-2018    | 30-Nov-2018        | <i>✓</i>   | 28-Nov-2018         | 06-Jan-2019        | ✓                     |
| Clear glass VOC vial - HCI (EP080)                              | 00 Nov 0040 | 00 Nov 0040    | 07 Dec 2010        |            | 00 Nov 0040         | 07 Dec 2010        |                       |
| QA200   | 23-NOV-2018 | 29-NOV-2018    | 07-Dec-2018        | ~          | 29-NOV-2018         | 07-Dec-2018        | ✓                     |
| EP080: BTEXN  |             |                |                    |            |                     |                    |                       |
| Clear glass VOC vial - HCl (EP080)                              |             |                |                    |            |                     |                    |                       |
| QA200   | 23-Nov-2018 | 29-Nov-2018    | 07-Dec-2018        | ~          | 29-Nov-2018         | 07-Dec-2018        | $\checkmark$          |
| EP231A: Perfluoroalkyl Sulfonic Acids                           |             |                |                    |            |                     |                    |                       |
| HDPE (no PTFE) (EP231X)   |             |                |                    |            |                     |                    |                       |
| QA200   | 23-Nov-2018 | 28-Nov-2018    | 22-May-2019        | <u>√</u>   | 29-Nov-2018         | 22-May-2019        | ✓                     |
| EP231B: Perfluoroalkyl Carboxylic Acids                         |             |                |                    |            |                     |                    |                       |
| HDPE (no PTFE) (EP231X)   |             |                |                    |            |                     |                    |                       |
| QA200   | 23-Nov-2018 | 28-Nov-2018    | 22-May-2019        | <i>✓</i>   | 29-Nov-2018         | 22-May-2019        | $\checkmark$          |
| EP231C: Perfluoroalkyl Sulfonamides                             |             |                |                    |            |                     |                    |                       |
| HDPE (no PTFE) (EP231X)   |             |                |                    |            |                     |                    |                       |
| QA200   | 23-Nov-2018 | 28-Nov-2018    | 22-May-2019        | 1          | 29-Nov-2018         | 22-May-2019        | ✓                     |
| EP231D: (n:2) Fluorotelomer Sulfonic Acids                      |             |                |                    |            |                     |                    |                       |
| HDPE (no PTFE) (EP231X)   |             |                |                    |            |                     |                    |                       |
| QA200   | 23-Nov-2018 | 28-Nov-2018    | 22-May-2019        | ✓          | 29-Nov-2018         | 22-May-2019        | <ul> <li>✓</li> </ul> |
| EP231P: PFAS Sums   |             |                |                    |            |                     |                    |                       |
| HDPE (no PTFE) (EP231X)   |             |                |                    |            |                     |                    |                       |
| QA200   | 23-Nov-2018 | 28-Nov-2018    | 22-May-2019        | 1          | 29-Nov-2018         | 22-May-2019        |                       |



# **Quality Control Parameter Frequency Compliance**

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

| Matrix: WATER  |            |                |         | Evaluatio | n: × = Quality Co | ontrol frequency              | not within specification ; $\checkmark$ = Quality Control frequency within specification. |
|--|------------|----------------|---------|-----------|-------------------|-------------------------------|---|
| Quality Control Sample Type                          |            | Count Rate (%) |         |           | Rate (%)          | Quality Control Specification |   |
| Analytical Methods                                   | Method     | QC             | Reaular | Actual    | Expected          | Evaluation                    |   |
| Laboratory Duplicates (DUP)                          |            |                |         |           |                   |                               |   |
| Dissolved Mercury by FIMS                            | EG035F     | 1              | 7       | 14.29     | 10.00             | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| Dissolved Metals by ICP-MS - Suite A                 | EG020A-F   | 2              | 12      | 16.67     | 10.00             | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| PAH/Phenols (GC/MS - SIM)                            | EP075(SIM) | 1              | 4       | 25.00     | 10.00             | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X     | 2              | 20      | 10.00     | 10.00             | 1                             | NEPM 2013 B3 & ALS QC Standard  |
| TRH - Semivolatile Fraction                          | EP071      | 1              | 4       | 25.00     | 10.00             | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| TRH Volatiles/BTEX                                   | EP080      | 1              | 10      | 10.00     | 10.00             | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| Volatile Organic Compounds                           | EP074      | 2              | 15      | 13.33     | 10.00             | 1                             | NEPM 2013 B3 & ALS QC Standard  |
| Laboratory Control Samples (LCS)                     |            |                |         |           |                   |                               |   |
| Dissolved Mercury by FIMS                            | EG035F     | 1              | 7       | 14.29     | 5.00              | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| Dissolved Metals by ICP-MS - Suite A                 | EG020A-F   | 1              | 12      | 8.33      | 5.00              | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| PAH/Phenols (GC/MS - SIM)                            | EP075(SIM) | 1              | 4       | 25.00     | 5.00              | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X     | 1              | 20      | 5.00      | 5.00              | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| TRH - Semivolatile Fraction                          | EP071      | 1              | 4       | 25.00     | 5.00              | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| TRH Volatiles/BTEX                                   | EP080      | 1              | 10      | 10.00     | 5.00              | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| Volatile Organic Compounds                           | EP074      | 1              | 15      | 6.67      | 5.00              | 1                             | NEPM 2013 B3 & ALS QC Standard  |
| Method Blanks (MB)                                   |            |                |         |           |                   |                               |   |
| Dissolved Mercury by FIMS                            | EG035F     | 1              | 7       | 14.29     | 5.00              | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| Dissolved Metals by ICP-MS - Suite A                 | EG020A-F   | 1              | 12      | 8.33      | 5.00              | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| PAH/Phenols (GC/MS - SIM)                            | EP075(SIM) | 1              | 4       | 25.00     | 5.00              | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X     | 1              | 20      | 5.00      | 5.00              | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| TRH - Semivolatile Fraction                          | EP071      | 1              | 4       | 25.00     | 5.00              | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| TRH Volatiles/BTEX                                   | EP080      | 1              | 10      | 10.00     | 5.00              | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| Volatile Organic Compounds                           | EP074      | 1              | 15      | 6.67      | 5.00              | ✓                             | NEPM 2013 B3 & ALS QC Standard  |
| Matrix Spikes (MS)                                   |            |                |         |           |                   |                               |   |
| Dissolved Mercury by FIMS                            | EG035F     | 1              | 7       | 14.29     | 5.00              | $\checkmark$                  | NEPM 2013 B3 & ALS QC Standard  |
| Dissolved Metals by ICP-MS - Suite A                 | EG020A-F   | 1              | 12      | 8.33      | 5.00              | $\checkmark$                  | NEPM 2013 B3 & ALS QC Standard  |
| PAH/Phenols (GC/MS - SIM)                            | EP075(SIM) | 1              | 4       | 25.00     | 5.00              | $\checkmark$                  | NEPM 2013 B3 & ALS QC Standard  |
| Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS | EP231X     | 1              | 20      | 5.00      | 5.00              | $\checkmark$                  | NEPM 2013 B3 & ALS QC Standard  |
| TRH - Semivolatile Fraction                          | EP071      | 1              | 4       | 25.00     | 5.00              | $\checkmark$                  | NEPM 2013 B3 & ALS QC Standard  |
| TRH Volatiles/BTEX                                   | EP080      | 1              | 10      | 10.00     | 5.00              | $\checkmark$                  | NEPM 2013 B3 & ALS QC Standard  |
| Volatile Organic Compounds                           | EP074      | 1              | 15      | 6.67      | 5.00              | $\checkmark$                  | NEPM 2013 B3 & ALS QC Standard  |



## **Brief Method Summaries**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

| Analytical Methods                                      | Method     | Matrix | Method Descriptions  |
|---|------------|--------|--|
| Dissolved Metals by ICP-MS - Suite A                    | EG020A-F   | WATER  | In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.  |
| Dissolved Mercury by FIMS                               | EG035F     | WATER  | In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS)<br>Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique.<br>A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic<br>mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell.<br>Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM<br>(2013) Schedule B(3)  |
| TRH - Semivolatile Fraction                             | EP071      | WATER  | In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)   |
| Volatile Organic Compounds                              | EP074      | WATER  | In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)  |
| PAH/Phenols (GC/MS - SIM)                               | EP075(SIM) | WATER  | In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)   |
| TRH Volatiles/BTEX                                      | EP080      | WATER  | In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve.<br>Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)  |
| Per- and Polyfluoroalkyl Substances<br>(PFAS) by LCMSMS | EP231X     | WATER  | In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. This method complies with the quality control definitions as stated in QSM 5.1. Data is reviewed in line with the DQOs as stated in QSM5.1 |
| Preparation Methods                                     | Method     | Matrix | Method Descriptions  |
| Preparation for PFAS in water.                          | EP231-PR   | WATER  | Method presumes direct injection without workup. Preparation includes addition of internal standard and surrogate, and filtration prior to anaylsis.   |



| Preparation Methods                     | Method  | Matrix | Method Descriptions   |
|---|---------|--------|---|
| Separatory Funnel Extraction of Liquids | ORG14   | WATER  | In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel |
|   |         |        | and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined,  |
|   |         |        | dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3). ALS    |
|   |         |        | default excludes sediment which may be resident in the container.   |
| Volatiles Water Preparation             | ORG16-W | WATER  | A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.                     |



# QA/QC REPORT



# **Quality Control / Quality Assurance Report**

Quality Assurance/Quality Control (QA/QC) procedures were implemented to ensure the precision accuracy, representativeness, completeness and comparability of all data gathered. The QA/QC procedures included:

- > Equipment calibration to ensure field measurements obtained are accurate;
- > Equipment decontamination to prevent cross contamination;
- > The completion of a log for each soil bore;
- > Use of appropriate measures (i.e. gloves) to prevent cross contamination;
- > Appropriate sample identification;
- > Collection and analysis of duplicate samples for QA/QC purposes;
- > Correct sample preservation;
- > Sample transport with Chain of Custody (COC) documentation; and
- > Laboratory analysis in accordance with NATA accredited methods.

**Table G-1** details the QA/QC procedures and sample collection details undertaken through the elements of the investigation. **Table G-2** summarises the number of QA/QC samples collected during this investigation. Copies of all the COCs, along with the Sample Receipt Notifications (SRNs), Interpretive QA/QC Reports are provided in **Appendix F**.

| Requirement               | Yes/No | Comments   |
|---------------------------|--------|--|
| Equipment calibration     | Yes    | Calibration certificates are presented at the end of this Appendix.  |
| Equipment decontamination | Yes    | Decontamination of sampling equipment (hand auger and solid flight) was<br>undertaken by washing with phosphate free detergent (Liquinox) followed by a<br>rinse with potable water.   |
| Soil logging              | Yes    | All intrusive locations and soil samples collected were logged in accordance with the Unified Soil Classification System. Borehole logs provided in <b>Appendix E</b> .  |
| Sample collection         | Yes    | Samples were collected using disposable nitrile gloves and placed directly into appropriate sample jars and resealable bags provided by the laboratory. A clean pair of gloves was used for each new sample being collected to limit the possibility of cross-contamination.   |
| Sample identification     | Yes    | All samples were marked with a unique identifier including project number, sample location, depth and date.  |
| QA/QC sample collection   | Yes    | Two soil duplicate samples were collected for intra-lab QA/QC purposes with a further two triplicate soil samples collected to monitor the quality of the field practices for sample collection. Cardno based the investigation around a rate of one duplicate sample per 20 primary samples as the requirement for duplicate sample collection.   |
| Sample preservation       | Yes    | Samples were placed in a chilled ice box with ice for storage and transport to the laboratory. Samples for ASS analysis were frozen following field works.   |
| COC documentation         | Yes    | A COC form was completed by Cardno detailing sample identification, collection date, sampler and laboratory analysis required. The COC form was signed off and returned to Cardno by the laboratory staff upon receipt of all the samples. COC forms and Sample Receipt Notification (SRN) are provided in <b>Appendix F</b> . The SRN indicates that the samples were received at the laboratory intact and chilled and within the required holding times. Outliers present on the SRNs were addressed with the laboratory. |
| NATA accredited methods   | Yes    | Eurofins mgt, a NATA accredited laboratory analysed the samples in accordance with NATA accredited methods. Inter-lab QAQC samples were analysed at ALS Environmental Services. Analytical methods used are indicated in the stamped laboratory results provided in <b>Appendix F</b> .  |

Table G-1 Field QA/QC Method Validation

|                          |                          |                                   | ,         |                       |               |                |         |  |
|--------------------------|--------------------------|-----------------------------------|-----------|-----------------------|---------------|----------------|---------|--|
| Investigation<br>Element | Date                     | Sample Type and Number of Samples |           |                       |               |                |         |  |
|                          |                          | Primary                           | Duplicate | Split<br>(Triplicate) | Trip<br>blank | Field<br>blank | Rinsate |  |
| Soil                     | 10/11/2018<br>17/11/2018 | 41                                | 2         | 2                     | 1             | 1              | 1       |  |
| Groundwater              | 23/11/2018               | 3                                 | 1         | 1                     | -             | -              | -       |  |

#### Table G-2 Field QA/QC Collection Summary

# **Relative Percentage Difference Determination**

Laboratory results for duplicate and triplicate samples are assessed using a determination of the Relative Percentage Difference (RPD). Where a primary sample and a duplicate sample are compared, the RPD provides an indication of the reproducibility of the results, which incorporates the sampling method. Where a primary sample and a split sample are compared, the RPD provides an indication of the accuracy of the primary laboratory results as compared to the secondary laboratory result.

The calculation used to determine the RPD is:

$$RPD = \frac{(Co - Cs)}{\left(\frac{Co + Cs}{2}\right)} x100$$

Where:

Co = Concentration of the original sample

Cs = Concentration of the duplicate sample

In calculating the RPD values the following protocols were adopted:

- > Where both concentrations are above laboratory reporting limits the RPD formula is used;
- > Where both concentrations are below the laboratory reporting limits, no RPD is calculated; and
- > Where one or both sample concentrations are reported to be less than ten times (<10x) the laboratory reporting limit, the RPD is calculated but is not assessed against the adopted criterion.

In accordance with the Australian Standard 4482.1-2005 (Standards Australia, 2005), Cardno adopts an RPD acceptance criterion up to 50% of the mean concentration of the analyte. It should be noted that variations might be higher for organic analysis, due to the volatile nature of the components, and for low concentrations of analytes.

The adopted criterion will not apply to RPDs where one or both concentrations are less than 10 times the reporting limit, as this criterion would otherwise overestimate the significance of minor variations in concentrations at or near the laboratory reporting limit. Large RPDs returned for low concentrations of analytes near the reporting limit is not as indicative of a significant difference in the results as a small RPD is for larger concentrations.

This approach is employed by NATA accredited laboratories when assessing internal duplicate sample RPDs. This approach acknowledges that concentrations at or around the reporting limit are too low for an accurate evaluation of the significance of the RPD.

This approach has been adopted when assessing the relevance (compliance) of RPDs during this investigation. RPDs will be calculated for sample sets where one or both concentrations are less than 10 times the reporting limit for discussion purposes, but will not be assessed as a pass or fail in relation to the criterion.

A list of primary samples for the duplicate and triplicate soil and groundwater samples is provided in **Table G**-**3** with a summary of the RPD results is presented in **Appendix D**.

| Table G-3 | Primary.  | duplicate and | triplicate sam | ple summarv   |
|-----------|-----------|---------------|----------------|---------------|
|           | i innary, | auphouto una  | inplicate call | pio ourninary |

| Parent Sample | Matrix | Duplicate ID | Triplicate ID |
|---------------|--------|--------------|---------------|
| TP12_0.2      | Soil   | QA100        | QA200         |
| TP16_0.1      | Soil   | QA300        | QA400         |
| MW02          | Water  | QA100        | QA200         |

### Laboratory QC and QCI Report Summary

The laboratory selected for undertaking the analysis (Eurofins mgt) is NATA accredited for the analysis required, and undertook certain QA/QC requirements to demonstrate the suitability of the data that is obtained. The laboratory is required to undertake and report internal laboratory Quality Control (QC) procedures for all chemical analysis undertaken. The QC testing is required to include:

- > Laboratory duplicate sample analysis at the rate of one duplicate analysis per ten samples;
- > Method blank at the rate of one method blank analysis per 20 samples;
- > Laboratory control sample at the rate of one laboratory control sample analysis per 20 samples; and
- > Spike recovery analysis at the rate of one spike recovery analysis per 20 samples.

Compliance with the laboratory QA/QC requirements and non-conformance details are discussed in the internal Laboratory QA/QC reports included with the certificates of analysis in **Appendix F.** 

The QA/QC Reports received from Eurofins mgt and ALS Laboratory (in **Appendix F**) highlights outliers flagged in the Quality Control Report and Holding Time breaches and breaches in the Frequency of Quality Control Samples. Review of the QA/QC documentation provided by Eurofins mgt and ALS indicates outliers existed which are summarised in **Table G-4** and **G-5**.

| Table G-4 | Laboratory QA/QC outlier summary – Eurofins mgt Laboratory |
|-----------|--|
|-----------|--|

|  | QC Sample ID | Analyte                                     | Description                                   |  |  |  |
|--|--------------|---|---|--|--|--|
| Outliers: Quality Control Samples              |              |   |   |  |  |  |
| Method Blanks                                  | -            | -   | -   |  |  |  |
| Duplicates                                     | M18-No15527  | TRH C15-C28,<br>TRH C29-C36,<br>TRH C16-C34 | RPD >30%, within Eurofins acceptance criteria |  |  |  |
| Laboratory Control Samples                     | -            | -   | -   |  |  |  |
| Matrix Spikes                                  | -            | -   | -   |  |  |  |
| Regular Sample Surrogates                      | -            | -   | -   |  |  |  |
| Outliers: Analysis Holding Time                | Compliance   |   |   |  |  |  |
| None   |              |   |   |  |  |  |
| Outliers: Frequency of Quality Control Samples |              |   |   |  |  |  |
| None   |              |   |   |  |  |  |

#### Table G-5 Laboratory QA/QC outlier summary – ALS Laboratory

|                           | QC Sample ID |   | Analyte | Description |
|---------------------------|--------------|---|---------|-------------|
| Outliers: Quality Control | Samples      |   |         |             |
| Method Blanks             |              | - | -       | -           |
| Duplicates                |              | - | -       | -           |
| Laboratory Control Sam    | ples         | - | -       | -           |
| Matrix Spikes             |              | - | -       | -           |



| QC Sample ID                               | Analyte | Description |  |  |
|--|---------|-------------|--|--|
| Regular Sample Surrogates -                | -       | -           |  |  |
| Outliers: Analysis Holding Time Compliance |         |             |  |  |
| N/A  |         |             |  |  |
| Frequency of Quality Control Samples       |         |             |  |  |
| N/A  |         |             |  |  |

Cardno concludes that the data reported by the NATA accredited Eurofins mgt and ALS Laboratory as presented in this ESA is suitable for interpretative purposes and to make conclusions/recommendations regarding Site contamination.



Air-Met Scientific P/L 7-11 Ceylon Street Nunawading Victoria 3131, Australia

Calibration Certificate

This document hereby certifies that this instrument detailed has been calibrated to the parameters listed below.

Certificate Print Date: 4 July, 2018 Calibration Date: 4 July, 2018 Next Calibration Due: 4 January, 2019

Call ID: 00220083

Job / SO Number: 231229

| Customer:    | Cardno | Туре:      | Port Gas Det |
|--------------|--------|------------|--------------|
| Model:       | PID    | Serial No: | 595-001369   |
| Description: | PID    |            |              |

|        |           |                   |                                   |     |     | Ь         | istrument F           | leadings |
|--------|-----------|-------------------|-----------------------------------|-----|-----|-----------|-----------------------|----------|
| Sensor | Date Code | Gas<br>Bottle No. | Calibration Gas and Concentration | C.F | C.V | Certified | Before /<br>Span Res. | After    |
| 5HD    | 11        | SY123             | ISOBUTYLENE 100PPM, BAL           |     |     | NIST      | 94.9PPM               | 100.5PPM |
|        | //        |                   |                                   |     |     |           |                       |          |
|        | //        |                   |                                   |     |     |           |                       |          |
|        | 17        |                   |                                   |     |     |           |                       |          |
|        | //        |                   |                                   |     | 1   |           |                       |          |
|        | //        |                   |                                   |     |     |           |                       |          |

| Completed by: Jason Cheng | Signed:                             |
|---------------------------|-------------------------------------|
|                           | CE Conversion Postor CV Comparented |

Australian Standard Alarm Levels

CF - Conversion Factor, CV Compensated Value CV = CF \* Span Gas

# TAYLOR

APPENDIX 14: FLOOD EMERGENCY RESPONSE SUB-PLAN

# FLOOD EMERGENCY RESPONSE PLAN OUR REF:7863-FERP

# KYEEMAGH PUBLIC SCHOOL JACOBSON AVENUE, KYEEMAGH NSW 2261

PREPARED BY: CAMERON AMRI DATE: 17/07/2020 REVISION: **D** 

# DOCUMENT VERIFICATION

| Project Title  | Kyeemagh Public School        |
|----------------|-------------------------------|
| Document Title | Flood Emergency Response Plan |
| Project No.    | 7863                          |
| Description    | Flood Emergency Response Plan |
| Client Contact | Taylor Constructions          |

|             | Name           | Signature    |
|-------------|----------------|--------------|
| Prepared by | Cameron Amri   | Comeron Anni |
| Checked by  | Michael Grogan |              |
| Issued by   | Michael Grogan |              |

# **REPORT DELIVERABLES**

This report is to meet condition B18 of the SSD Conditions.

| Condition | Condition requirements                                 | Document reference       |
|-----------|--|--------------------------|
|           | The Flood Emergency Response Sub-Plan                  | CV Attached Appendix D   |
|           | (FERSP) must address, but not be limited               |                          |
|           | to, the following:                                     |                          |
|           | (a) be prepared by a suitably qualified                |                          |
| B18       | and experienced person(s);                             |                          |
|           | (b) address the provisions of the Floodplain           | Section 3.2              |
|           | Risk Management Guidelines (EESG);                     |                          |
|           | (c) include details of:                                |                          |
|           | (i) the flood emergency response for                   | Section 5.2              |
|           | construction phase of the development;                 |                          |
|           | (ii) predicted flood levels;                           | 3.5 Flood Documentation  |
|           | (iii) flood warning time and flood                     | Section 4.2 & 4.3        |
|           | notification;  |                          |
|           | (iv) assembly points and evacuation                    | Section 5.1 & Appendix B |
|           | routes;  |                          |
|           | <ul><li>(v) evacuation and refuge protocols;</li></ul> | Section 5.2              |
|           | and  |                          |
|           | (vi) awareness training for employees                  | Section 7                |
|           | and contractors, and students.                         |                          |

# DOCUMENT HISTORY

| Date     | Revision | Issued to  | Description |
|----------|----------|------------|-------------|
| 17/07/20 | -A       | DWP Suters | For CC1     |
| 30/07/20 | -В       | DWP Suters | For CC1     |
| 11/09/20 | -C       | Taylors    | Amendment   |
| 18/09/20 | -D       | Taylors    | Amendment   |

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# 1 EXECUTIVE SUMMARY

Birzulis Associates have been commissioned by Taylor Constructions to prepare a Flood Emergency Response Plan (FERP) on behalf of SINSW for the proposed stage 1 and stage 2 construction at Kyeemagh Public School. This report addresses the condition B18 in the SSD CoC, relevant Council DCP requirements and that of SES.

The aim of this FERP is for planning an evacuation (if required) due to flooding, promote situational awareness of expected flood behaviour and risks, identify measures to become flood prepared, recommend suitable coarse of action during and after flood events and any training required and by who.

This report will contain methodology used to support its conclusions and recommendations, a summary of the likely flood behaviours and safe exit routes from the site if required.

Stage 1 of the proposed works involves the demolition of the existing buildings to the North-East of the site and construction of the buildings on that half of the site.

Stage 2 of the proposed works will occur approximately after practical completion (PC) of the stage 1 works and the demolition of the existing buildings to the South-West half of the site.

The primary objective of this report is to define flood behaviours to Jacobson Avenue and Beehag Street. And any elements of these that contribute to the site itself.

# 2 INTRODUCTION

# 2.1 LOCATION

The site is located at 30A Jacobson Avenue, Kyeemagh NSW 2216 is broken up into two lots D.Ps (D.P.120095 & D.P. 335734). The current site is the operating site of Kyeemagh Public School. The site is generally sparsely planted and with minimal hard pavements.

To the North-West the site abuts a previous townhouse villa style development. To the South-East the site abuts Beehag Street. To the South-East the site abuts Jacobson Avenue. To the North-East the site abuts the school childcare centre which operates on the site and is not proposed to be altered. The site falls from the West to the South East at approximately 4%.

The total site area is 10 329m<sup>2</sup>.

The site is shown below represented as Figure 2.1



Figure 2.1.1 – Total D.P. Envelope



Figure 2.1.2 - Overall Site Plan Showing Staging of Works



Figure 2.1.3 - Aerial View of Kyeemagh Public School (Source: Google Map 2020)



Figure 2.1.4 – Existing Survey (prepared by C.M.S Surveyors Pty Ltd 09/02/18)

# 2.2 GOVERNING AUTHORITIES FOR THIS SITE

Bayside Council

Department of Education

Emergency Services – SES – Police – Fire – Ambulance

Department of Environment Climate Change and Water

### 2.3 GLOSSARY OF TERMINOLOGY

Annual Exceedance Probability (AEP):

The chance of a flood of a given size (or larger) occurring in any one year, usually expressed as a percentage. For example, if a peak flood discharge of 500 m3/s has an AEP of 5%, it means that there is a 5% chance (i.e. a 1 in 20 chance) of a peak discharge of 500 m3/s (or larger) occurring in any one year. (see also average recurrence interval)

#### Australian Height Datum (AHD):

National survey datum corresponding approximately to mean sea level.

#### Astronomical Tide:

Astronomical Tide is the cyclic rising and falling of the Earth's oceans water levels resulting from gravitational forces of the Moon and the Sun acting on the Earth.

#### Attenuation

Weakening in force or intensity.

#### Average recurrence interval (ARI):

The long-term average number of years between the occurrence of a flood as big as (or larger than) the selected event. For example, floods with a discharge as great as (or greater than) the 20-year ARI design flood will occur on average once every 20 years. ARI is another way of expressing the likelihood of occurrence of a flood event. (see also annual exceedance probability)

#### Calibration:

The adjustment of model configuration and key parameters to best fit an observed data set.

#### Catchment:

The catchment at a particular point is the area of land that drains to that point.

#### Design flood event:

A hypothetical flood representing a specific likelihood of occurrence (for example the 100-year ARI or 1% AEP floods).

#### Development:

Existing or proposed works that may or may not impact upon flooding. Typical works are filling of land, and the construction of roads, floodway's and buildings.

#### Discharge:

The rate of flow of water measured in terms of volume per unit time, for example, cubic meters per second (m3/s). Discharge is different from the speed or velocity of flow, which is a measure of how fast the water is moving for example, meters per second (m/s).

#### Flood:

Relatively high river or creek flows, which overtop the natural or artificial banks, and inundate floodplains and/or coastal inundation resulting from super elevated sea levels and/or waves overtopping coastline defences.

#### Flood behaviour:

The pattern / characteristics / nature of a flood.

#### Flood fringe:

Land that may be affected by flooding but is not designated as floodway or flood storage

#### Flood hazard:

The potential risk to life and limb and potential damage to property resulting from flooding. The degree of flood hazard varies with circumstances across the full range of floods.

#### Flood level:

The height or elevation of floodwaters relative to a datum (typically the Australian Height Datum). Also referred to as "stage".

#### Flood liable land:

See flood prone land

#### Floodplain:

Land adjacent to a river or creek that is periodically inundated due to floods. The floodplain includes all land that is susceptible to inundation by the probable maximum flood (PMF) event.

#### Floodplain management:

The co-ordinated management of activities that occur on the floodplain.

#### Floodplain risk management plan

A document outlining a range of actions aimed at improving floodplain management. The plan is the principal means of managing the risks associated with the use of the floodplain. A floodplain risk management plan needs to be developed in accordance with the principles and guidelines contained in the NSW Floodplain Management Manual. The plan usually contains both written and diagrammatic information describing how particular areas of the floodplain are to be used and managed to achieve defined objectives. Flood planning levels (FPL):

Flood planning levels selected for planning purposes are derived from a combination of the adopted flood level plus freeboard, as determined in floodplain management studies and incorporated in floodplain risk management plans. Selection should be based on an understanding of the full range of flood behaviour and the associated flood risk. It should also consider the social, economic and ecological consequences associated with floods of different severities. Different FPLs may be appropriate for different categories of land use and for different flood plans. The concept of FPLs supersedes the "standard flood event". As FPLs do not necessarily extend to the limits of flood prone land, floodplain risk management plans may apply to flood prone land beyond that defined by the FPLs.

#### Flood prone land:

Land susceptible to inundation by the probable maximum flood (PMF) event. Under the merit policy, the flood prone definition should not be seen as necessarily precluding development. Floodplain Risk Management Plans should encompass all flood prone land (i.e. the entire floodplain).

#### Flood source:

The source of the floodwaters.

#### Flood storage:

Floodplain area that is important for the temporary storage of floodwaters during a flood.

#### Floodway:

A flow path (sometimes artificial) that carries significant volumes of floodwaters during a flood.

#### Freeboard:

Factors of safety usually expressed as a height above the adopted flood level thus determine the flood planning level. Freeboard tends to compensate for factors such as wave action, localised hydraulic effects and uncertainties in the design flood levels.

#### Geomorphology:

The study of the origin, characteristics and development of landforms.

#### Gauging (tidal and flood)

Measurement of flows and water levels during tides or flood events.

#### Historical flood:

A flood that has actually occurred.

#### Hydraulic:

Relating to water flow in rivers, estuaries and coastal systems; in particular,

the evaluation of flow parameters such as water level and velocity.

#### Hydrodynamic:

Pertaining to the movement of water.

#### Hydrograph:

A graph showing how a river or creek's discharge changes with time.

#### Hydrographic survey:

Survey of the bed levels of a waterway

#### Hydrologic:

Pertaining to rainfall-runoff processes in catchments

#### Hydrology:

The term given to the study of the rainfall-runoff process in catchments

#### Hyetograph:

A graph showing the distribution of rainfall over time.

#### Intensity Frequency Duration (IFD) Curve:

A statistical representation of rainfall showing the relationship between rainfall intensity, storm duration and frequency (probability) of occurrence.

#### Isohyets:

Equal rainfall contour.

#### Morphological:

Pertaining to geomorphology

#### Peak flood level, flow or velocity:

The maximum flood level, flow or velocity that occurs during a flood event.

#### **Pluviometer:**

A rainfall gauge capable of continuously measuring rainfall intensity

#### Probable maximum flood (PMF):

PMF is an extreme flood event or the largest flood that could conceivably occur at a particular location, usually estimated from probable maximum precipitation, and where applicable, (such as snow / hail melt, blockages), coupled with the maximum flood that is likely to occur. Producing the worst flood for that catchment.

#### Probability:

A statistical measure of the likely frequency or occurrence of flooding.

#### Riparian:

The interface between land and waterway. Literally means "along the river margins"

#### Runoff:

The amount of rainfall from a catchment that ends up as flowing water in the river or creek

#### Stage:

See flood level.

#### Stage hydrograph:

A graph of water level over time.

#### Sub-critical:

Refers to flow in a channel that is relatively slow and deep.

#### Topography:

The shape of the surface features of land

#### Velocity:

The speed at which the floodwaters are moving. A flood velocity predicted by a computer flood model is quoted as the depth averaged velocity, i.e. the average velocity throughout the depth of the water column or velocity across the whole river or creek section, or roadway.

#### Validation:

A test of the appropriateness of the adopted model configuration and parameters (through the calibration process) for other observed events.

#### Water level:

The level of the top of the water being described.

### 2.4 SCOPE OF METHODOLOGY

This report was based on flood information provided by Bayside Council and from Flooding Advice completed by Cardno 31 October 2018

In addition to this, a DRAINS model with overland flow capabilities was prepared to determine the capacity of the Council trunk drainage system to cope with upstream flows for any serious incident of pit surcharging in vicinity of the school.

# 3 FLOOD BEHAIVIOUR

# 3.1 POSSIBLE FLOOD SOURCE/S AND MECHANISMS

The site may be impacted by two flood mechanisms/types of flooding:

1. Fluvial flooding – flooding from Cooks River (rising river waters); and

2. Pluvial flooding (overland flow) – flooding from rainfall within the local catchment. It is important to understand both types of flooding as they pose different risks, have different consequences and evacuation & refuge response.

There is not a significant upstream catchment for this site given the site is located somewhat on a peninsula where the lands falls towards the water on all sides.

Also, the site is not significantly far from the mouth of the Cooks River and Botany Bay.

The main source is the stormwater and runoff running down Jacobson Avenue and towards Jacobson avenue from the upstream blocks.

It is important to note that the area is a marine sand area with moderate infiltration capacity and as such runoff generated will mainly be from imperious areas and are not significantly contributed to by the pervious areas.

### 3.2 <u>NSW OEH FLOODPLAIN RISK MANAGEMENT</u> <u>GUIDELINES</u>

The NSW Office of Environment and Heritage (OEH) has released a range of standard documents to support the implementation of the NSW Government's Flood Prone Land Policy through the development and implementation of FRM plans by local government through the FRM process as outlined in the Floodplain Development Manual (2005).

### **3.2.1** Flood Emergency Response Planning (ERP) – Classification of Communities

Of relevance to the CRC FRP is the guideline Flood Emergency Response Planning (ERP) – Classification of Communities. The guideline recommends that the ERP classification of the floodplain be undertaken for the probable maximum flood (PMF) and 20 and 100 year average recurrence interval (ARI) events. Classifications are to be provided for each event with reference back to the event.

The Site is classified according to NSW OEH definitions as shown in Table 3.2.1 below.

| ARI  | NSW OEH<br>classification                 | NSW OEH definition  |
|--|---|---|
| 20 year ARI – River<br>Flood   | Area with rising road<br>accessible (RRA) | Areas with Rising Road Access (RRA) are those areas<br>where access roads rising steadily uphill and away<br>from the rising floodwaters. The community cannot<br>be completely isolated before inundation reaches its<br>maximum extent, even in the PMF. Evacuation can<br>take place by vehicle or on foot along the road as<br>floodwater advances. People should not be trapped<br>unless they delay their evacuation from their homes.<br>For example people living in two storey homes may<br>initially decide to stay but reconsider after water<br>surrounds them.   |
| 20 year ARI –<br>Pluvial flood<br>(overland flow)<br>100 year ARI<br>PMF | High Flood Island<br>(HFI)                | High Flood Island (HFI). The flood island includes<br>enough land higher than the limit of flooding (i.e.<br>above the PMF) to cope with the number of people<br>in the area. During a flood event the area is<br>surrounded by floodwater and property may be<br>inundated. However, there is an opportunity for<br>people to retreat to higher ground above the PMF<br>within the island and therefore the direct risk to life<br>is limited. The area will require resupply by boat or<br>air if not evacuated before the road is cut. If it will<br>not be possible to provide adequate support during<br>the period of isolation, evacuation will have to take<br>place before isolation occurs. |

Table 3.2.1

# **3.2.2** State Emergency Services Requirements from the Floodplain Risk Management Process

Also of relevance to the site's FERP is the State Emergency Services Requirements from the Floodplain Risk Management Process which describes how the FRM process assists State Emergency Service (SES) in effective emergency response planning (ERP).

For HFI's, the key considerations are:

- External access cut, area becomes isolated;
- Transport infrastructure shutdown (railways/airports);
- Risk Of Flooding Of Key Public Utilities (Water/Sewage/Gas/Power) Starts; and
- Whole area flooded or max flood extents occur.

## 3.3 EXISTING STORMWATER DRAINAGE

The property is currently developed as a public school with an existing pit and pipe drainage system located on site. All current overland flows travel towards the east eventually discharges onto Tancred avenue and then to the crook s river located approximately 200m to the North. The indicative external stormwater network is shown in Figure 2.3.1 and is the Council trunk drainage system and is believed to be in a satisfactory condition.



Figure 2.3.1 – Indicative External Stormwater system (Source: Bayside Council)

# 3.4 PROPOSED SITE DRAINAGE SYSTEMS

The proposed site drainage system is to install infiltration systems to capture and infiltrate the site runoff onsite with only minimal discharge offsite. This will significantly reduce any flooding impact of hydraulic stress on the existing stormwater drainage system in Jacobson Avenue. The table below shows the post construction site runoff to be significantly less than the pre-development condition reducing peak discharge in the 100 year event from 225 litres per second to 81 litres per second.

|      | Design   | Peak Flow (m3/s) |                  |                 |  |
|------|----------|------------------|------------------|-----------------|--|
| ARI  | Storm    | Pre-developed    | Post-developed   |                 |  |
| Dura | Duration | Site             | Site (no atten.) | Site (+ atten.) |  |
| 5    | 5        | 0.112            | 0.143            | 0.009           |  |
| 20   | 5        | 0.191            | 0.221            | 0.063           |  |
| 100  | 5        | 0.225            | 0.257            | 0.081           |  |

Table 3.2.2 - Site and Detention Hydrology

# 3.5 FLOOD DOCUMENTATION

Flood design guidance has been provided by Bayside Council and Cardno using a review of relevant flood studies. The following is relevant:

- The design flood level for the site is RL 2.65m AHD provided by Bayside Council
- The Probable Maximum flood (PMF) level is RL 2.98m AHD provided by Bayside Council.
- Flood planning level is RL 3.15m AHD provided by Bayside Council.
- The site has been assessed as Low Hazard by Bayside Council.
- The water table is probable at RL 1.5m 2m AHD.
  - The proposed building floor level of RL4.65m AHD is sufficiently located above the design flood level.

A small floor storage area presents in the 1:100 year ARI event with a depth approximately 0.1m to 0.3m located in vicinity of RL 3.5m on the site.

#### Cardno's Flooding Advice letter dated 20 May 2020 for the site states

"Further to our letter dated 31 October 2018 in regard to Kyeemagh Public School and the effect on flooding on the proposed development we confirm that we have reviewed the report prepared by BMT WBM dated February 2017- Spring Street Drain, Muddy Creek and Scarborough Ponds Catchments Flood Study Review.

Kyeemagh Public School is located at the corner of Jacobson Avenue and Beehag Street, Kyeemagh and a CORE 14 school development is proposed. The proposed development is a combination of single and double storey buildings with a constant proposed ground floor level of RL4.65m AHD.

Cardno have reviewed available flood mapping of the area surrounding the school as documented in the above report.

Flood extent mapping was reviewed for both the 1% AEP and PMF storm events. The Kyeemagh Public School site is shown to be affected by both the 1% AEP and PMF flood extents. A copy of relevant flood mapping is attached. The Kyeemagh Public School proposed floor level of RL4.65m is in our opinion, well above the expected 1% AEP and PMF flood levels based on the existing ground levels as documented in the attached part survey plan. We have also received the attached Flood Advice letter from Bayside Council dated 18 May 2020 that confirms that the property is affected by the 1% Annual Exceedance Probability (AEP) flood. The provided 1% AEP Flood level is RL 2.65m AHD and the Probable Maximum flood (PMF) level is RL 2.98m AHD. The letter also provides a Flood Planning level (FPL) RL 3.15m AHD which is a minimum height to be used for the setting of habitable floor levels. All of the provided flood levels in the Flood Advice letter are below the proposed building floor level of RL 4.65m AHD.

Further inspection shows that main roads near the site, such as General Holmes Drive, are not flood affected during the 1% AEP and PMP storm events. These roads are therefore expected to be available for use as an evacuation route if required."



Figure 2 – Kyeemagh Public School -1:100 year (approximately 0.1 to 0.3m depth)

| LEGEND     |                                       |
|------------|---------------------------------------|
| Peak Flood | Depth (m)                             |
| - 0.2      | (lower depths mapped as same colour)  |
| - 0.5      |                                       |
| - 1.0      |                                       |
| - 1.5      |                                       |
| - 2.0      | (higher depths mapped as same colour) |

Figure 3.4.1 – Shows the 100 year flooding for this immediate area and the site (Source: Cardno)



Figure 1 – Kyeemagh Public School – PMF (approximately 0.3-1.0m depth)



Figure 3.4.2 – Shows the PMF flooding for this immediate area and the site (Source: Cardno)
### 3.6 FLOOD SOURCE ELIMINATION

The mapping below shown the surge water level as a result of the flood source from the Cooks River does not affect the site in the 100 year rain event or the PMF event. This can be ruled out as a flood source for the site and it can be concluded the only flood source is local stormwater runoff.



Figure 3.5.1 – Shows the 100 year flooding for Botany Bay & Cooks River (Source: Cardno)



Figure 3.5.2 – Shows the PMF flooding for Botany Bay & Cooks River (Source: Cardno)

## 3.7 FLOOD BEHAVIOUR & FLOOD HAZARD CATEGORYS

Given the elimination of the Cooks River flood source the site should have a relatively short response time less than 1 hour. Basically this site will be performing more of a flash flooding style performance in lieu of a long response time where flood waters need time to drain from significant upstream catchments. Hence, it is imperative that prompt action is taken to avoid adverse impacts to exposure to flood hazards.

Flood modelling and VxD governs the ability of evacuation. As can be seen above, even in the MPF flood the carpark exit will not be flood affected. Also it has been previously noted that General Holmes Drive is not flood affected. Evacuation and response to the site is possible through that exit and main road.

Modelling along Jacobson Avenue suggest the maximum water flow above ground (assuming 80% pit blockages) could be up to 0.620m<sup>3</sup> per second. This equates to a flow depth of 0.168mm, a velocity of 1.3 meters per second and a VD relationship of 0.21 which is less than the 0.4 safe maximum.

It can thus be concluded that exiting and entry to the site from Jacobson Avenue is possible up to the 100 year event.

It should be noted that driving through flood waters is extremely hazardous and risk of vehicles being swept away downstream is shown below in the following figures.



Figure 3.6.1 – Velocity & Depth relationships



Figure 3.6.2 – Hazard Categories

## 4 FLOOD EVEACUATION WARNINGS

### 4.1 FLOOD INTELIGENCE

Rainfall gauge stations are maintained by the Bureau of Meteorology (BOM) throughout Sydney. These provide information to the BOM including other information sources to assist in the flood warning systems. The BOM issues five times of warnings through the following methods:

- Radio
- Television
- Websites
  - o <a href="http://www.bom.gov.au/">http://www.bom.gov.au/</a>
  - o <a href="http://www.bom.gov.au/nsw/warnings/">http://www.bom.gov.au/nsw/warnings/</a>

In addition to this the SES may issue warnings in the form of:

- Bulletins
- Evacuation Warnings or Evacuation Order

The critical 100-year storm event duration has been identified as approximately the 2-hour event. This does not mean that the peak flood level will occur exactly 2 hours after a heavy rainfall event commences but does provide an indication on how rapidly the water levels will rise within Jacobson Avenue.

It is recommended that a temporary flood gauge be installed in a visible location at the low point on the site corner (north eastern corner) at approximately RL 4.0 to provide indication of the rate of rise in flood levels within Jacobson Avenue for the duration of the construction works.

15 minutes after heavy rainfall commences all plant should be relocated to an area above the 100year flood extent on the northern side of the site. All work shall cease within the flood prone area and employees and contractors shall take shelter within the site amenities as located on the site establishment plan appended to this report.

Works should not recommence within any flood prone area until 1 hour after the water level upstream of Jacobson Avenue has started to subside. At this time the site manager will issue the 'All Clear' and the exclusion zone removed.

### 4.2 FLOOD NOTIFICATION - TRIGGER/ACTION

Flood warning notifications are the first stage of the flood warning system implemented by the managing contractor. Flood warnings are triggered when flooding is likely to cut evacuation routes or inundate flood prone areas of the site. During any rain event the site manager and/or supervisor shall review the flood gauge at the commencement of the rainfall, 5 minutes and 10 minutes after

the rainfall event starts. If a significant rate of rise is observed (greater than 0.6m/hr) then the site manger or supervisor shall notify any workers within the flood extent to cease work immediately and relocate themselves, plant and any other loose items clear of the flood prone area.

A call shall be put over the site radio that a flood notification has been issued and the areas of the site within the 100 year flood extent shall be classified as an exclusion zone during the rainfall event. Given the location of the temporary site access road (off Jacobson Avenue) this includes the main Stage 1 entry/exit to the site.

### 4.3 WARNING TYPES

### 4.3.1 Severe Weather Warning

Given by the BOM, are provided for potentially hazardous or dangerous weather that is not solely related to severe thunderstorms, tropical cyclones or bushfires. They are issued whenever severe weather is occurring in an area or is expected to develop or move into an area.

### 4.3.2 Severe Thunderstorm Warning

Given by the BOM, are provided to warn communities of the threat of dangerous thunderstorms. They are issued when a severe thunderstorm is occurring or likely to occur.

### 4.3.3 Flood Alert/Watch/Advice

A flood alert/watch/advice will be issued if flood producing rain is expected. This provides an early warning that flooding may occur

### 4.3.4 Generalised Flood Warning

A generalised flood warning is to be issued when flooding is expected to occur in a given area. Three hours warning time is expected from issue of warning to peak flood level as per the "Service Level Specification for Flood Forecasting and Warning Services for New South Wales – Version 2.0" (Bureau of Meteorology, 2013).

This is the most likely warning type for the subject site should evacuation need to occur.

### 4.3.5 Minor/Moderate Flood Warning

A more detailed flood warning may be issued based on any additional information available. Three hours warning time is expected from issue of warning to peak flood level. Real time river and harbour height data is available from the Bureau of Meteorology website. As at January 2017, this link was *http://www.bom.gov.au/nsw/flood/*. All warnings will be issued through the website, radio and television. Radio frequencies include ABC Sydney (702AM, 92.9FM, 206.352MHz digital), Triple J (105.7FM), 2DayFM (104.1FM), Triple M (104.9FM), Nova (96.9FM), KIIS (106.5FM), 2GB (873AM), 2UE (954AM). All public and Commercial television stations should broadcast warnings.

### 4.3.6 SES Flood Bulletins

The SES may issue a flood bulletin providing information of the likely flood consequences and recommended actions.

### 4.3.7 Evacuation Warning

The SES/Police may issue an evacuation warning which allows time to prepare for evacuation.

### 4.3.8 Evacuation Order

The SES will issue an Evacuation Order if evacuation is required. If this occurs evacuation **must** be undertaken. Broadcast will be via radio/TV, door knock, automated telephone message or SMS.

### 4.3.9 Early Warning Network Automated Text and Email Service

The property can register for automatic alerts with the Early Warning Network (www.ewn.com.au) which will filter the above BoM warnings and send texts and emails to the Chief Flood Warden or property owners to notify them of the situation.

### 4.3.10 On-Site Emergency Tone

The PA system will have an uninterrupted power supply and be configured to sound an emergency tone meaning all visitors, staff and students shall assemble in the designated assembly point (the Auditorium) under the direct of staff and flood wardens. This tone will be tested every drill, or once a term. Should it be inoperable in the event of an emergency, an air horn and handheld loudspeaker is located within the Flood Emergency Kit.

### 4.3.11 Dipstick Flood Alert System

The Dipstick Flood Alert System by Tuftec (http://tuftec.com.au) will provide a failsafe for notification on-site in the event that no warnings are issued by either the Bureau or the SES. This device senses when water reaches a pre-determined level and sends a text with an alert and rate of rise to nominated stakeholders including Council and all Flood Wardens.

### 4.3.12 Flood Depth Gauge

This is a manual system where the depth gauge shows the flood depth and markings can be made on the depth to determine the flood severity. For example, 100 year event or 50 year event.

# 5 ASSEMBLY POINT AND SAFE EVACUATION RESPONSE ROUTES

### 5.1 EMERGENCY ASSEMBLY POINT

The site manager or supervisor shall notify any workers to cease work and relocate themselves to:

- Stage 1: the lunch room shed which is 400mm above ground and above PMF water flows. All workers shall be accounted for.
- Stage 2: the upper carpark off Beehag Street

In the event any worker/contractor cannot be accounted for the following steps shall be undertaken:

- 1. A radio call be placed across emergency site channel or appropriate site channel to identify the unaccounted-for person. This shall be made a minimum of three times. Also, their mobile phone shall be rung from the site sign in sheet.
- 2. The site manager or delegated person shall inspect where safe to do so the flood affected area and the site to locate the unaccounted-for person. It is important to note that at no time shall a person enter the flooded area whilst flood waters are rising.
- 3. If this fails to locate the person all other reasonable means shall be used such as email, office phone calls text messages and so on.

Workers shall remain in the refuge of the site office/s until the "all clear" has been given by the site manager.



Figure 5.1.1 – Assembly Point and Refuges

## 5.2 EVACUATION RESPONSE & REFUGE

Since the site is only partially flood prone and site accommodations have been located outside of the 100-year flood extent there is no foreseeable reason why the site would have to be fully evacuated due to a flood. Should an evacuation be required for any other reason then the Emergency Management Plan prepared by the managing contractor shall be implemented.

Given the above, **the strategy of rest-in-place (onsite refuge) is recommended for this site during major flood events**. The site is not cut off by flood water and has access to main roads unaffected in a major flood event however where possible, evacuation during a significant flood event should be discouraged.

### 5.3 SITE ACCESS ROUTES DURING FLOODING

Stage 1: Given the main site access is from Jacobsons Avenue there are no employees or contractors will be able to leave the site in a south easterly direction during heavy rainfall.

Stage 2: Given the main site access is from Beehag Street there is no restrictions to employees or contractors leaving the site during a flood event through the upper carpark as long as they walk away from Jacobsons Avenue.

Should workers or contractor be required to leave site they shall notify the site manager and leave the site in a westerly direction.

Only once the flood risk has abated and the site manager issued the 'All Clear' shall the main site accesses be open and egress to all directions re-established.

## 6 EMERGENCY CONTACT

For State Emergency Services (SES) which offer emergency assistance during major natural events are available by phone on 132 500

For Police, Fire or Ambulance which offer specialist first responders call 000

Once the call has been made notify the key appointments noted in Table 5.2

## 7 FLOOD RESPONSE PREPARATION AND TRAINING

Flood Awareness training shall be provided as part of site inductions and "tool-box meetings" (not less than every 3 months) as an ongoing reminder.

The following floor awareness items shall be covered:

- 1. Location of assembly areas, and predicted flood levels based on flood mapping given in this report.
- 2. Details of the types of flood warnings and notifications
- 3. The refuge protocol "rest-in-place"
- 4. Changes to the site access during heavy rainfall

# 8 FLOOD EMERGENCY RESPONSE FOR BOTH CONSTRUCTION AND OPERATIONAL PHASE

During proposed construction works all site employees and contractors will be informed about the SINSW site wide flood evacuation/emergency management plan requirements and guidelines. Taylor Construction will work with the stakeholders prior to completion of works, to incorporate any changes required to this plan as a result of this development.

## 9 CONCLUSION

As the site is only partially affected by a PMF flood and unaffected by a 1:100 year flood the site is relatively low risk.

The following strategies have been documented and require implementation to ensure that the requirements of the SSD Condition of Consent is achieved:

- Predicated flood levels and extent of flooding on-site is as per Section 3.
- Flood warning times and flood notification Monitoring, as per details in Section 4.
- Assembly points and refuge protocols as detailed in Section 5.
- Changes to site access as a result of flooding as detailed in Section 5.

• Ensuring employees and contractors are aware of the site-specific flood risk as outlined in Section 7.

We have examined the site, relevant documentation/reference material and the proposed development in accordance with acceptable engineering practice. We have undertaken overland flow checks to determine velocities in the road flows offsite. We declare that he proposed development will be safeguarded from flooding and flood damage associated with the design flood and will not adversely affect any other structure or property,. We area also satisfied the foreseeable flood related risks are adequately identified and managed by this report.

## 10 REFERENCES

Rockdale LEP 2011 – Flood maps

Rockdale DCP 2011

The Construction Soil and Water Management Plan for this site prepared by us.

NSW Government's 'Floodplain Development Manual 2005'.

Spring Street Drain, Muddy Creek and Scarborough Ponds Catchments 2D Flood Study Review, BMT WBM, 2017

SES Flood Safe Website

SES Emergency Business Continuity Plan

Bureau of Meteorology website



## 11 APPENDIX A – GROUND LEVEL FLOOR PLAN

Figure A.1 – Ground Level Floor Plan

## 12 APPENDIX B - FLOOD EVACUATION ROUTE



Figure B.1 – Flood Evacuation Route North (only for emergencies during a major flood event)



Figure B.2 – Flood Evacuation Route South (only for emergencies during a major flood event)

## 13 APPENDIX C - REFERENCED DOCUMENTATION



-

18 May 2020

Our Ref: FA-2020/81 Contact: Pulak Saha

Mr C Farinola 203 Pacific Hwy ST LEONARDS NSW 2065

#### Dear Mr C Farinola

.

#### Re: Flood Advice Letter for 30A & 30B Jacobson Avenue, Kyeemagh

| When lodging a Development Application you must enclose a copy of this letter. |  |  |
|--|--|--|
| FLOOD<br>NOTATION  | Council has not notated this property as being affected by the 1% Annual<br>Exceedance Probability (AEP) flood.  |  |
|  | The 1% AEP flood means there is a 1% chance of a flood of this height, or<br>higher occurring in any one year.   |  |
|  | This property is above the 1% AEP flood level, however it is adjacent to and/or less than 0.5 m above the 1% AEP flood level.  |  |
|  | This property will require protection from flooding by setting minimum floor levels.   |  |
| FLOOD STUDY  | The Council Flood Study applicable to the property is:<br>Spring Street Drain, Muddy Creek and Scarborough Ponds Catchments 2D<br>Flood Study Review, BMT WBM, 2017  |  |
| FLOOD LEVELS   | 1% AEP Flood level: 2.65m Australian Height Datum (AHD)<br>5% AEP Flood level: 2.62m Australian Height Datum (AHD)   |  |
|  | Probable Maximum Flood (PMF) Level:<br>2.98m AHD   |  |
| FLOOD RISK   | The Flood Risk Exposure of the site has been assessed as   |  |
| FLOOD  | Low Hazard: Land partly below flood planning level.<br>No accurate information is recorded regarding the impact of tsunamis in<br>the Bayside Local Government area. |  |

| Eastgardens Customer Service Centre<br>Westfield Eastgardens<br>152 Bunnerong Road<br>Eastgardens NSW 2036, Australia<br>ABN 80 690 785 443 Branch 004 | Rockdale Customer Service Centre<br>444-446 Princes Highway<br>Rockdale NSW 2216, Australia<br>ABN80 690 785443 Branch 003<br>DX 25308 Rockdale | Phone 1300 581 299<br>T (02) 9562 1666 F 9562 1777<br>E council@bayside.nsw.gov.au<br>W www.bayside.nsw.gov.au |
|--|---|--|
| 8.0.0  |   | Postal address: PO Box 21, Rockdale NSW 2216   |

Telephone Interpreter Services - 131 450 Tŋλεφωνικές Υπηρεσίες διερμηνέων بخدمة الترجمة الهائفية 電話傳譯服務處 Служба за преведување по телефон

Our Ref: 80818157LO:01 CF Contact: Cosmo Farinola

20 May 2020

DWP | Design Worldwide Partnership Suite 2, 19 Harris Street Pyrmont NSW 2009

Attention: Cameron Martin

Dear Cameron,

#### KYEEMAGH PUBLIC SCHOOL - FLOODING ADVICE

Further to our letter dated 31 October 2018 in regard to Kyeemagh Public School and the effect on flooding on the proposed development we confirm that we have reviewed the report prepared by BMT WBM dated February 2017- Spring Street Drain, Muddy Creek and Scarborough Ponds Catchments Flood Study Review.

Kyeemagh Public School is located at the corner of Jacobson Avenue and Beehag Street, Kyeemagh and a CORE 14 school development is proposed. The proposed development is a combination of single and double storey buildings with a constant proposed ground floor level of RL4.65m AHD.

Cardno have reviewed available flood mapping of the area surrounding the school as documented in the above report.

Flood extent mapping was reviewed for both the 1% AEP and PMF storm events. The Kyeemagh Public School site is shown to be affected by both the 1% AEP and PMF flood extents. A copy of relevant flood mapping is attached. The Kyeemagh Public School proposed floor level of RL4.65m is in our opinion, well above the expected 1% AEP and PMF flood levels based on the existing ground levels as documented in the attached part survey plan.

We have also received the attached Flood Advice letter from Bayside Council dated 18 May 2020 that confirms that the property is affected by the 1% Annual Exceedance Probability (AEP) flood. The provided 1% AEP Flood level is RL 2.65m AHD and the Probable Maximum flood (PMF) level is RL 2.98m AHD. The letter also provides a Flood Planning level (FPL) RL 3.15m AHD which is a minimum height to be used for the setting of habitable floor levels. All of the provided flood levels in the Flood Advice letter are below the proposed building floor level of RL 4.65m AHD.

Further inspection shows that main roads near the site, such as General Holmes Drive, are not flood affected during the 1% AEP and PMP storm events. These roads are therefore expected to be available for use as an evacuation route if required.

Should you require any additional information, please do not hesitate to contact the undersigned.

Yours sincerely,

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Cosmo Farinola Business Unit Manager - Buildings for Cardno Direct Line: +61 2 9496 7749 Email: cosmo.farinola@cardno.com.au

#### Attachments

- 1. Flood Extent Mapping PMF ARI BMT WBM report dated February 2017
- 2. Flood Extent Mapping 100 year ARI BMT WBM dated February 2017
- 3. Survey Report CMS Surveyors dated 09/02/2018
- 4. Bayside Council Flood Advice letter dated 18 May 2020.

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## 14 Appendix D – CV of Engineer



### CAMERON AMRI SENIOR CIVIL & STRUCTURAL ENGINEER

Bachelor of Engineering in Civil Engineering University of Technology Sydney

### Professional memberships

Member of the Institution of Engineers, Australia Chartered Professional Engineer (CPEng) Registered on the National Engineering Register (NER) Registered Professional Engineer of Queensland

### Experience

Since completing his degree in 2007, Cameron has worked as a civil structural engineer for MLH, Kneebone & Beretta, E2 Design and for Birzulis Associates Pty Ltd.

### A selection of projects Cameron has been involved in:

#### Aged Care

- HammondGrove, Hammondville
- Scalabrini Village Bexley
- Scalabrini Village Drummoyne
- Scalabrini Village Austral
- Scalabrini Village Chipping Norton
- Scalabrini Village Griffith
- Scalabrini Village Yoogali

### Religious

- Our Lady of Mount Carmel
- Catholic Parish of Mary Immaculate

#### Education

- Thomas Reddall High School
- Westmead Public School
- Springwood High School

- Chifley Campus
- Parramatta West Public School
- Blacktown Tafe
- · Wiley Park Girls High School
- Chester Hill High School
- Doonside High School
- Westfield Sports High
- Ingleburn High School
- Wenona School, North Sydney
- Granville Public School
- Bellevue Hill Public School
- Riverstone High School
- Mount Annan Public School
- Matthew Pearce Primary School
- Mount Druitt Tafe
- NirimbaTafe

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