



**Douglas Partners**  
*Geotechnics | Environment | Groundwater*

Report on  
Detailed Site Investigation (Contamination)

Lot 62 Maitland Street, Muswellbrook

Prepared for  
Pacific Brook Christian School Ltd

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Integrated Practical Solutions



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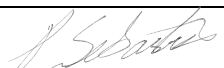
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## Table of Contents

|                                                                      | Page |
|----------------------------------------------------------------------|------|
| 1. Introduction.....                                                 | 1    |
| 2. Site Description .....                                            | 2    |
| 3. Geology and Hydrogeology.....                                     | 5    |
| 4. Background .....                                                  | 5    |
| 5. Site Condition.....                                               | 6    |
| 6. Conceptual Site Model .....                                       | 10   |
| 7. Field Work .....                                                  | 12   |
| 7.1 Sampling Rationale.....                                          | 12   |
| 7.2 Methods .....                                                    | 12   |
| 7.3 Well Design and Installation .....                               | 13   |
| 7.4 Well Development / Purging and Sampling .....                    | 13   |
| 7.5 Results .....                                                    | 14   |
| 7.6 Groundwater .....                                                | 14   |
| 7.7 Contaminant Observations .....                                   | 16   |
| 8. Data Quality Objectives.....                                      | 16   |
| 8.1 Data Quality Objectives (DQOs).....                              | 16   |
| 8.2 Sampling and Analysis.....                                       | 17   |
| 8.2.1 Soil Sample Collection, Decontamination and Preservation ..... | 17   |
| 8.2.2 Laboratory QA / QC .....                                       | 18   |
| 9. Laboratory Testing .....                                          | 18   |
| 9.1 Analytical Programme.....                                        | 18   |
| 9.2 Analytical Results.....                                          | 19   |
| 9.2.1 Contamination Testing .....                                    | 19   |
| 10. Site Assessment Criteria (SAC).....                              | 22   |
| 10.1 Introduction .....                                              | 22   |
| 10.2 Soils .....                                                     | 22   |
| 10.2.1 Health Investigation and Screening Levels.....                | 22   |
| 10.2.2 Ecological Investigation Levels .....                         | 24   |
| 10.2.3 Ecological Screening Levels .....                             | 24   |
| 10.2.4 Management Limits.....                                        | 25   |
| 10.2.5 Asbestos in Soil.....                                         | 25   |
| 10.2.6 Waste Classification.....                                     | 26   |
| 10.2.7 Groundwater .....                                             | 26   |

|             |                                              |    |
|-------------|----------------------------------------------|----|
| 10.3        | Groundwater .....                            | 27 |
| 10.3.1      | Groundwater Investigation Levels.....        | 27 |
| 10.3.2      | Health Screening Levels .....                | 28 |
| 11.         | Assessment of Contamination .....            | 29 |
| 12.         | Comments / Recommendations.....              | 30 |
| 13.         | References .....                             | 30 |
| 14.         | Limitations .....                            | 31 |
| Appendix A: | About this Report                            |    |
|             | Sampling Methods                             |    |
|             | Soil Descriptions                            |    |
|             | Symbols and Abbreviations                    |    |
|             | Borehole Logs (Bores 201 and 202)            |    |
|             | Test Pit Logs (Pits 101 to 116)              |    |
| Appendix B: | Laboratory Reports                           |    |
| Appendix C: | Chain of Custody Sheets (Field and Despatch) |    |
|             | Sample Receipt                               |    |
| Appendix D: | Drawing 1 – Test Location Plan               |    |



## **Report on Detailed Site Investigation (Contamination)**

### **Lot 100 DP 1261496, Maitland Street, Muswellbrook NSW**

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## **1. Introduction**

This report presents the results of a detailed site investigation (DSI) for contamination undertaken at Lot 62 Maitland Street, Muswellbrook. The investigation was commissioned by Stephanie Ferguson from NRBS Architecture on behalf of Pacific Brook Christian School and was undertaken with reference to Douglas Partners Pty Ltd (DP) proposal NCL190331 dated 5 June 2019.

It is understood that the proposed development on the site will comprise a school facility (primary and secondary school).

The site has undergone a preliminary contamination assessment (PCA) by JK Environments (JK) in April 2019. The PCA recommended a Stage 2 Detailed Site Assessment (DSI) and a hazardous building materials survey on the existing site structures.

This DSI was undertaken to further assess the potential contamination sources identified in the PCA (JK, 2019) as recommended, and assess the suitability of the site for the proposed development from a contamination perspective.

It is noted that the hazardous building material survey was also conducted by DP and has been reported separately.

The DSI comprised the following:

- Brief review of the PCA (JK, 2019) and confirmation of scope for the current investigation;
- Site inspection to assess current site conditions;
- Mark out and service locating at proposed test locations;
- Excavation of 16 shallow test pits across the site to supplement the PCA;
- Drilling of two boreholes and installation of two groundwater monitoring wells;
- Developing, purging and sampling of the two groundwater wells;
- Laboratory testing of selected soil and groundwater samples for a range of potential organic and inorganic contaminants;
- Preparation of this reporting presenting the results of the assessment.

The investigation was undertaken with reference to NEPM 2013 and NSW EPA "Guidelines for Consultants Reporting on Contaminated Sites".

## 2. Site Description

The site is triangular in shape, with a northwest/southeast alignment and has an area of 2.432 ha. The site is bound by Muswellbrook Golf Course along the north eastern boundary, Maitland Street along the south western boundary and residential properties to the south eastern boundary (see below – Aerial image of site boundary). The site address is 72-74 Maitland Street and is legally described as Lot 100 in Deposited Plan (DP) 1261496 (see below – Site Context).

The site is generally level with a slight slope to a watercourse at the north west boundary. This watercourse flows northeast into the adjoining golf course and on to Muscle Creek via a series of dams on the golf course. Muscle Creek flows west into the Hunter River which at its closest is 1.3 km north-west of the site. Stormwater management on site is by overland flow.

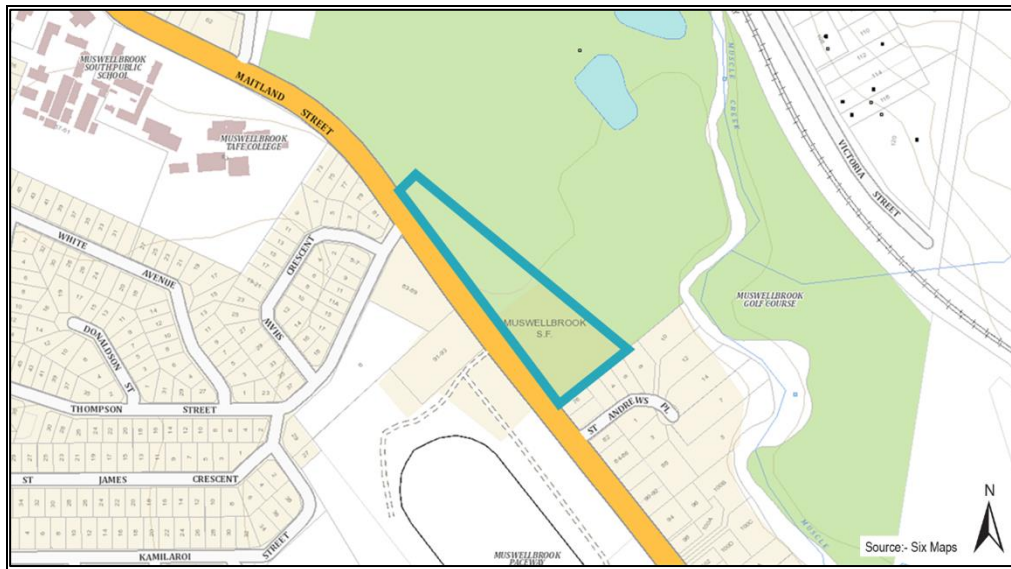
72-74 Maitland Street was previously used for forestry plantation purposes and is mapped as Muswellbrook State Forest. The site is no longer used for this purpose and currently sits as an empty and underutilised site.

The main vehicular access to the site is from Maitland Street, as well as pedestrian access. Existing vehicular parking on site includes open air at grade parking spaces facing Maitland Street.

In terms of travel, Muswellbrook is approximately three (3) hours from Sydney, three hours (3) from Dubbo, two (2) hours from Tamworth and 90 minutes from Newcastle.



**Aerial Image of Site Boundary**



## Site Context

At the time of the investigation the site was vacant and generally comprised several empty buildings in connection with the previous site use (plant nursery), gravel and asphalt paths, gravel garden beds and grass covering.

The site is bound by Maitland Street to the south west, residential developments immediately to the south east with a service station located further to the south east (approximately 60 m), a golf course to the west and north.

The site is currently zoned RU3 – Forestry and is within Muswellbrook Shire Council.

Refer to Drawing 1 – Test Location Plan in Appendix D for site features.

## Proposed Development

Pacific Brook Christian School proposes the staged construction of a new school at 72-74 Maitland Street, Muswellbrook. This will involve site preparation work (including remediation), the removal of 96 trees (7 within Stage 1), civil works, infrastructure works, landscaping, signage and construction works in stages over the next 10 years.

The masterplan will support high-quality educational outcomes to meet the needs of students within the local community as follows:

- Administration building and Library;
  - One (1) staff and student amenities block;
- Junior School facilities;
  - Ten (10) General Learning Areas (GLAs);
  - Two (2) Specialist classroom;
  - One (1) Store; and
  - Covered Outdoor Learning Area (COLA)

- Middle School facilities;
  - Seven (7) General Learning Areas (GLAs);
  - One (1) Science classroom; and
  - Covered Outdoor Learning Area (COLA)
- Senior School facilities;
  - Eight (8) General Learning Areas (GLAs);
  - One (1) Specialist classroom;
  - Three (3) TAS classrooms;
  - Two (2) Food Tech classrooms;
  - One (1) Art classroom;
  - One (1) Drama classroom;
  - Four (4) amenities block;
  - Three (3) Store; and
  - Covered Outdoor Learning Area (COLA)
- Hope School (special needs) facilities;
  - Four (4) General Learning Areas (GLAs);
  - One (1) Specialist classroom;
  - Four (4) Shared Withdrawal rooms;
  - One (1) Office;
  - One (1) Staff room;
  - One (1) Interview + Therapy room;
  - Three (4) amenities block;
  - Three (3) Store; and
  - Covered Outdoor Learning Area (COLA)
- Multi-Purpose Hall;
- Maximum student capacity of 656;
- Maximum 65 staff;
- Agricultural teaching facility;
- Maintenance and bus area;
- On-site Parking (67 spaces, inclusive of 1 accessible);
- Bike parking x 36;
- Internal pathways;
- Kiss and drop off areas;
- Bus stop;
- Waste Storage and collection area;
- Signage;
- Bush Chapel
- Removal of 96 trees (total);
- Landscaping (including Bush Chapel);
- Infrastructure works;
- Earthworks;
- Secondary emergency vehicle/ large vehicle access;
- Acoustic and safety fence; and
- Widening of existing vehicular access from Maitland Street

Stage 1 of the masterplan consists of:

- Site remediation;
- Removal of 7 trees;
- Facilities for a maximum of 140 students and 16 staff, including:

- One (1) administration and staff area;
  - One (1) staff and student amenities block (including one (1) end of trip facility);
  - Five (5) General Learning Areas (GLAs);
  - One (1) Science classroom; and
  - Covered Outdoor Learning Area (COLA)
- Internal pathways;
  - On-site Parking (15 spaces, inclusive of 1 accessible);
  - Bike parking x 6;
  - Kiss and drop off areas;
  - Bus stop;
  - Bin storage and collection area;
  - Signage;
  - Infrastructure works; and
  - Widening of existing vehicular access from Maitland Street.

### 3. Geology and Hydrogeology

Reference to the 1:250,000 Geology geodatabase indicates that the majority of the site is underlain by Quaternary alluvium deposits which typically comprise gravel, sand, silt and clay and the south western portion is underlain by the Branxton Formation typically comprising conglomerate, sandstone, siltstone.

The regional groundwater flow regime is believed to the north and north west towards Muscle Creek (located approximately 350 m north of the site) and is considered to be the nearest sensitive receptor. The depth to the water table is likely to be <5 m based on site topography and geology. It should be noted that groundwater levels are affected by climatic conditions and soil permeability and will therefore vary with time.

Reference to the Acid Sulphate Soil Risk Map, prepared by the Department of Land and Water Conservation (DLWC) indicates the site is not mapped within an area known to comprise acid sulfate soils.

### 4. Background

The PCA undertaken by J K Environmental in April 2019 comprised a site history review, drilling of 20 boreholes, sampling and laboratory testing. The results of the investigation identified following:

- Fill materials were identified in all bores from 0.1 m to 0.8 m which comprised a mixture of clayey silt, sandy gravel and gravel materials;
- Natural materials were encountered in all bores beneath the filling and typically comprised silty clay materials;
- Groundwater was not encountered during the previous investigation, however minor seepage was encountered in the southern portion of the site at a depth of 0.8 m which may have been attributed to site infrastructure (i.e. site irrigation) as opposed to natural groundwater;



- It was noted that no odours or staining were observed in the filling or natural materials during the investigation;
- Results of laboratory testing indicated minor exceedances of PAHs and hydrocarbons above human health and ecological criteria in regard to the proposed landuse.

The previous investigation also outlined the following data gaps:

- The sampling density was approximately 57% of the minimum sampling density recommended for hotspot identification, as outlined in the NSW EPA Sampling Design Guidelines (1995) for a site area of approximately 25,000 m<sup>2</sup>. A minimum of 15 additional sampling locations would be required to meet the guidelines for a Stage 2 Detailed Site Investigation (DSI). It is recommended that any further investigation is undertaken from test pits to provide a better visual assessment of the soil;
- Groundwater sampling was outside the scope of the preliminary assessment. The potential for on-site activities to have resulted in significant groundwater contamination is considered to be relatively low (based on the site observations and soil analysis results). However, an investigation will be required to assess the potential for contamination impacts associated with the service station to the south-east of the site;
- Chemical storage within the Hazchem sheds has the potential to leach through concrete slabs through historical leaks or spills. Additional sampling would be required around the edges of building slabs and within the building footprint to better characterise these areas; and
- The potential presence of hazardous building materials within the existing buildings.

## 5. Site Condition

Site conditions observed during the site walkover on 1 July 2019 are summarised below as follows:

- The site was vacant and contained several site structures as follows:
  - A possible residential property in the central northern portion of the site (Figure 1);
  - Administration buildings in the south central portion of the site;
  - A glasshouse in the south eastern portion of the site (Figure 2);
  - Two Hazchem sheds in the south eastern portion of the site (Figures 3); and
  - Several awning and shed structures and a large water tank were also located across the site (Figures 3 and 4).

The south eastern portion of the site was fenced housed majority of the building which were made of weatherboard cladding or metal sheeting along with metal sheet roofing.

The south eastern areas also comprised several mature trees along and adjacent to the site boundaries and internal gravel paths and gravel areas covered in weed matting presumably used as display beds when the previous nursery was in operation, the undeveloped areas in the south eastern portion were grassed covers (Figure 5).

The north western portion of the site was unfenced and appeared to be undeveloped comprising abundant mature trees and vegetative ground cover (Figure 6).

At the time of the inspection the majority of the accessible buildings (sheds, Hazchem and glasshouse) were mostly vacant. The two Hazchem buildings contained remnants of previous chemical storage (i.e. containers of pesticides etc) (Figure 7).

The concrete flooring and concrete surrounds within the Hazchem buildings did not comprised gross staining or evidence of chemicals leaking from the buildings.

Fibrous cement fragments were also encountered in south eastern portion of the site adjacent to the northern boundary (Figure 8).



**Figure 1: Possible residential building in the central portion of the site, looking south east.**



**Figure 2: Glasshouse in the south eastern portion of the site, looking north.**





**Figure 3: Hazchem buildings in the background and on the right and awning / shed on the left, looking south east.**



**Figure 4: Large water tank on the right and gravel beds lined with weed matting on left, looking south west.**



**Figure 5: Grassed covered areas, internal gravel paths and gravel / weed matting areas, looking north west.**





**Figure 6: Dense grass covered area with abundant mature trees in the undeveloped north western portion of the site, looking south.**



**Figure 7: Stored chemical containers within the Hazchem building.**



**Figure 8: Fibrous cement fragments encountered adjacent to the northern boundary in the south eastern portion of the site, looking north.**

## 6. Conceptual Site Model

A Conceptual Site Model (CSM) has been prepared for the site with reference to the National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amendment Measure 2013) Schedule B2. The CSM identifies potential contaminant sources and contaminants of concern, contaminant release mechanisms, exposure pathways and potential receptors. The CSM is presented in Table 1 below.

**Table 1: Conceptual Site Model**

| Known and Potential Primary Sources                      | Primary Release Mechanism                                                  | Secondary Release Mechanism                                                                                                     | Potential Impacted Media         | Contaminants of Concern                           | Exposure Pathway                                     | Potential Receptors                                                                                                      |                                                                                                                                                               |
|----------------------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------------|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                          |                                                                            |                                                                                                                                 |                                  |                                                   |                                                      | Current                                                                                                                  | Future                                                                                                                                                        |
| Filling observed within the site & opportunistic dumping | Placement/ storage of filling on-site or opportunistic dumping             | Long-term leaching of contaminants via runoff, rain water infiltration / percolation                                            | Soil, groundwater, surface water | TRH, BTEX, PAH, Metals, Pesticides, PCB, Asbestos | Dermal contact, inhalation (dust/vapours), ingestion | Site workers, maintenance workers, consultants, trespassers, surface water bodies, groundwater, neighbouring properties. | Site workers, members public, maintenance workers, construction workers, consultants, trespassers, surface water bodies, neighbouring properties, groundwater |
| Hazchem buildings                                        | Spills and leaks, from storage/use of fuels, oils, paints, pesticides etc. | Long-term leaching of contaminants via runoff, rain water infiltration / percolation, through soil or cracks/joints in concrete | Soil, groundwater, surface water | TRH, BTEX, PAH, Metals, Pesticides, PCB,          | Dermal contact, inhalation (dust/vapours), ingestion |                                                                                                                          |                                                                                                                                                               |
| Former structures                                        | Demolition of former structures                                            | Long-term leaching of contaminants via runoff, rain water infiltration / percolation or disturbance via traffic/excavation      | Soil, groundwater, surface water | Asbestos, PCB, Metals                             | Dermal contact, inhalation (dust), ingestion         |                                                                                                                          |                                                                                                                                                               |
| Adjacent Land Uses including petrol station              | Activities on-site                                                         | Migration of contamination onto site via runoff or groundwater migration                                                        | Soil, groundwater, surface water | TRH, BTEX, PAH, Lead                              | Dermal contact, inhalation (dust), ingestion         |                                                                                                                          |                                                                                                                                                               |

## 7. Field Work

### 7.1 Sampling Rationale

A systematic and judgemental sampling procedure was conducted for the detailed site assessment to further assess the principal sources of contamination identified in the PCA and to meet the sampling density (in conjunction with the PCA) across the site area.

A total of 16 shallow test pits (Pits 101 to 116) and two boreholes (Boreholes 201 and 202) were drilled / excavated and sampled for the assessment. The pits were located to provide a systematic coverage of the site and in conjunction with the PCA meet the required sampling density.

Two groundwater monitoring wells were installed within the two boreholes adjacent to the south eastern boundary. The wells were installed in Bores 201 and 202 to assist in determining groundwater levels and potential groundwater contamination from the nearby service station approximately 60 south east of the site.

Soil samples were selected for analysis on the basis of the likely presence of contamination, based on material type, visual or olfactory evidence of possible contamination (i.e. odour or staining), proximity to a known source of contamination, and whether generally representative of soil/fill conditions.

Groundwater samples were collected and analysed from each of the two installed monitoring wells for the DSI.

### 7.2 Methods

Field work was conducted between 1 and 8 July 2019 and comprised the following:

- Checking for underground services at proposed bore locations by a professional service locator prior to drilling;
- Drilling of two boreholes to depths of 7 m to 10 m using a track mounted drill rig with dual push tubes to facilitate collection of undisturbed samples;
- Excavation of 16 test pits to depths of 0.4 m to 1.5 m using a small excavator;
- Logging of the subsurface profile, including visual and olfactory assessment of potential contaminants in soil;
- Screening of soil samples for volatile organic impact with a photo-ionisation detector (PID);
- Installation, development, purging and sampling of two groundwater wells for contamination testing purposes.

The test locations were set out by an environmental engineer from DP who also logged the subsurface profile in the bores/pits and collected samples for identification and laboratory testing purposes. The approximate locations of the bores are shown on Drawing 1, Appendix D.



Samples for environmental purposes were generally collected from the near surface, and at regular depth intervals or changes in strata within each bore/pit. Soil samples were collected directly from within the tube liners or test pits walls using stainless steel sampling equipment and / or disposable gloves. Care was taken to remove any extraneous material deposited on the sample.

The process of obtaining samples and their transportation, storage and delivery to laboratories for analysis was documented on DP standard Chain of Custody (C-O-C) forms. Copies of completed forms are contained in Appendix C.

### **7.3 Well Design and Installation**

The groundwater wells were constructed of 50 mm diameter flush threaded Class 18 PVC and were installed in Bores 201 and 202 with reference to current industry standards, using push tubes from the drilling rig.

A 3 m to 6 m machine-slotted PVC screen with an end cap was installed at approximately from 4 m to below ground level to the termination depth (7 m to 10 m). A filter pack was installed in the bore annulus consisting of 5 mm graded and washed gravel to generally 0.5 m above the slotted PVC screen. A bentonite seal was placed above the filter pack within the annulus. Details of well design and construction are shown on the Borehole logs, Appendix A.

Drilling and well installation was undertaken under Quality Assurance / Quality Control (QA/QC) protocols to minimise the risk of cross contamination.

### **7.4 Well Development / Purging and Sampling**

Following installation, the wells were developed by removing groundwater until steady pH, Electricity Conductivity (EC) and Oxidation Reduction Potential (ORP) readings were achieved using new dedicated single check valve disposable bailers in order to provide an efficient hydraulic connection between the well and the formation. Regular measurements of the above field parameters were undertaken on groundwater during development using a calibrated portable meter until steady readings were achieved.

Prior to sampling, the wells were purged until steady pH, EC, ORP, Dissolved Oxygen (DO), temperature, turbidity readings were achieved using a disposable bailer.

Groundwater samples from the wells were collected using a disposable bailer and preserved in laboratory prepared containers for analysis. The samples were delivered to the laboratory within the recommended holding times for analysis. The groundwater level was allowed to recover from the effects of purging prior to sampling. Samples were collected under strict QA/QC protocols.

The headspace of the well and groundwater collected from the well was also screened for the presence of volatile organic compounds (VOC's) using a calibrated Photo-ionisation Detector (PID) following purging. Following development and prior to purging, an oil-water interface meter was used to confirm the depth to groundwater in each well for future groundwater contouring purposes and to assess the possible presence of floating product within each well.

The process of obtaining samples and their transportation, storage and delivery to laboratories for analysis was documented on DP standard C-O-C forms. Copies of completed forms are contained in Appendix C.

## 7.5 Results

The subsurface conditions are presented in detail in the borehole / test pit logs, Appendix A. These should be read in conjunction with the general notes preceding them, which explain definitions of the classification methods and descriptive terms.

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>FILLING:</b>                | Encountered in majority of the pits and bores with the exception of Pits 113, 114 and 115. The filling generally comprised a sandy silty topsoil filling to 0.1 m to 0.2 m. A gravelly sand sub base filling was encountered in Pits 105, 106 and 107 to 0.25 m to 0.4 m. Deeper sand filling was encountered in Pits 108 and 113 to 0.5 m. Ash was encountered in Pits 103, 107 and 111 along with asphalt lenses in Pit 106. |
| <b>SILTY CLAY/CLAYEY SILT:</b> | Encountered in all bores and pits from 0.1 m to 1.3 m (termination depth of pits).                                                                                                                                                                                                                                                                                                                                             |
| <b>SANDY GRAVEL:</b>           | Encountered in both bores from 2.1 m to 6.6 m.                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>CLAYEY SAND:</b>            | Encountered in Bore 201 from 3.4 m to 5.7 m.                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>CLAY:</b>                   | Encountered in both bores from 2.3 m to termination depth of 7 m to 10 m.                                                                                                                                                                                                                                                                                                                                                      |

The subsurface conditions encountered were generally commensurate with those found in JK, 2019.

## 7.6 Groundwater

Groundwater was not encountered during drilling of the two boreholes. It should be noted that groundwater levels are affected by factors such as climatic conditions, soil permeability and tidal influences and will therefore vary with time.

The results of gauging of groundwater wells conducted on 8 July 2019 prior to purging are presented in Table 2 below.

**Table 2: Groundwater Gauging and Field Parameters Measured During Purging & Sampling on 8 July 2019**

| Sample ID | Floating Product (mm) | PID Well Headspace (ppm) | PID GW Headspace (ppm) | Water Level below TOC (m) | Volume Purged (L) | pH  | EC (µS/cm) | DO (mg/L) | Turbidity (NTU) | ORP (mV) | Temp. (°C) | Comments               |
|-----------|-----------------------|--------------------------|------------------------|---------------------------|-------------------|-----|------------|-----------|-----------------|----------|------------|------------------------|
| 201       | 0                     | <1                       | <1                     | 6.87                      | 1                 | 7   | 2660       | 4.2       | 270             | 154      | 18.3       | Slightly turbid, brown |
| 202       | 0                     | <1                       | <1                     | 7.12                      | 8                 | 6.9 | 16100      | 2.4       | 304             | 56       | 19.5       | Very trubid, brown     |

Notes to Table 2:

EC – Electrical Conductivity  
 ORP – Oxidation Reduction Potential  
 DO – Dissolved Oxygen  
 PID – Photo-ionisation Detector

The results of groundwater field testing indicated the following:

- Groundwater was neutral (i.e. pH 6.9 to pH 7);
- Groundwater was generally slightly saline to very saline;
- Aerobic conditions were encountered;
- Moderate oxygen conditions;
- PID readings were low (i.e. <1 ppm) suggesting the absence of gross volatile organic compounds;
- Floating product was not detected in any of the wells (i.e. <1.2 mm).

## 7.7 Contaminant Observations

Observations of potential contamination within the boreholes / test pits are summarised in Table 3 below:

**Table 3: Potential Contamination Observations within Boreholes / Test Pits**

| Potential Contamination Observation | Locations and Depths (m)                                                                   |
|-------------------------------------|--------------------------------------------------------------------------------------------|
| Ash                                 | Pits 103, 107 and 111                                                                      |
| Asphalt lenses                      | Pit 106                                                                                    |
| Fibro fragment <sup>2</sup>         | Surface of Pit 111                                                                         |
| Filling <sup>1</sup>                | All bores / pits – refer to logs in Appendix A for details (except Pits 113, 114 and 115). |

Notes to Table 3:

1 - Potential presence of a range of contaminants (source unknown)

2 – Possible Asbestos Containing Material (ACM)

The results of PID screening on soil samples are shown on the borehole / test pit logs in Appendix A. PID screening generally suggested the absence of gross volatile hydrocarbon impact in majority of samples tested (i.e. <1 ppm).

No observations of gross contamination (i.e. staining or odours) were observed within groundwater during drilling or during purging and sampling of groundwater wells (refer Table 2 above).

## 8. Data Quality Objectives

### 8.1 Data Quality Objectives (DQOs)

Table 4 summarises the data quality indicators (DQIs) and the procedures designed to enable achievement of the data quality objective (DQOs).



**Table 4: Data Quality Indicators**

| <b>DQI</b>                                       | <b>Achievement Evaluation Procedure</b>                                                                                                                                                                                                                                      |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Documentation completeness                       | Completion of field and laboratory chain of custody documentation, completion of borehole / test pit logs.                                                                                                                                                                   |
| Data completeness                                | Sampling density comparison with Table A, NSW EPA Sampling Design Guidelines 1995, and analysis of appropriate determinants based on site history and on-site observation.                                                                                                   |
| Data comparability                               | Use of National Association of Testing Authorities, Australia (NATA) certified laboratory, use of consistent sampling technique.                                                                                                                                             |
| Data Representativeness                          | Completion of logs describing conditions encountered, collection of samples representative of materials encountered at the site, appropriate sampling methodology, analysis of a range of materials encountered, appropriate collection, handling, storage and preservation. |
| Precision and accuracy for sampling and analysis | Achievement of 50% RPD for replicate analysis, acceptable levels for laboratory QC criteria.                                                                                                                                                                                 |

## 8.2 Sampling and Analysis

### 8.2.1 Soil Sample Collection, Decontamination and Preservation

Soil samples for contamination testing were collected with reference to environmental sampling protocols and C-O-C documentation.

Samples for environmental purposes were generally collected from the near surface, and at regular depth intervals or changes in strata within each bore /pit. Soil samples were collected directly from within the tube liners or test pits walls using stainless steel sampling equipment and / or disposable gloves. Care was taken to remove any extraneous material deposited on the sample.

All sampling data was recorded on DP C-O-C. The general sampling procedure comprised:

- Decontamination of sampling equipment using a 3% solution of phosphate free detergent (Decon 90) and tap water prior to collecting each sample;
- The use of new disposable gloves for each sampling event;
- Transfer of samples into laboratory-prepared jars and capping immediately;
- Collection of replicate soil samples in zip-lock plastic bags at each depth for screening by PID;
- Collection of replicate samples for QA / QC purposes;
- Labelling of sample containers with individual and unique identification, including project number, sample location and sample depth;
- Placement of the sample containers and replicate sample bags into a cooled, insulated and sealed container for transport to the laboratory.

The process of obtaining samples and their transportation, storage and delivery to laboratories for analysis was documented on a DP standard C-O-C. Copies of completed forms are provided in Appendix C.

Replicate samples for each soil sample were screened for the presence of VOCs, using a MiniRAE LITE PID or MiniRAE 3000 with a 10.6 eV lamp, calibrated to 100 ppm Isobutylene.

### 8.2.2 Laboratory QA / QC

The NATA accredited chemical laboratory undertook in-house QA / QC procedures involving the routine testing of:

- Reagent blanks;
- Spike recovery analysis;
- Laboratory duplicate analysis;
- Analysis of control standards;
- Calibration standards and blanks; and
- Statistical analysis of QC data.

## 9. Laboratory Testing

### 9.1 Analytical Programme

Laboratory testing for the DSI was undertaken by Envirolab Services Pty Ltd, a NATA registered laboratory. Analytical methods used are shown in the laboratory sheets in Appendix B.

#### Soil

A total of 18 soil samples (including one QA/QC soil samples) and one fibro material sample were selected to provide an assessment of soil / fill conditions. The samples were selected to target the previously identified contaminants (i.e. PAHs and hydrocarbons) while also assessing the broader suite of potential contaminants identified (see Sections 6). The fill/soil samples were analysed for a range of the following potential contaminants:

- Metals: Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Iron (Fe), Lead (Pb); Mercury (Hg), Manganese (Mn), Nickel (Ni), Zinc (Zn);
- Total Recoverable Hydrocarbons (TRH);
- Benzene, Toluene, Ethyl Benzene, Xylene (BTEX);
- Polycyclic Aromatic Hydrocarbons (PAH);
- Polychlorinated Biphenyls (PCBs);
- Organochlorine (OC) and Organophosphate (OP) Pesticides;
- Asbestos Identification.

## Groundwater

A total of three groundwater samples (including 1 QA/QC sample) were collected and analysed to provide an assessment of groundwater conditions.

The groundwater samples were analysed for the following potential contaminants:

- Lead (Pb);
- Total Recoverable Hydrocarbons (TRH);
- Polycyclic Aromatic Hydrocarbons (PAH) (Low Level); and
- Benzene, Toluene, Ethyl Benzene, Xylene (BTEX);

QA/QC comprised analysis of one replicate soil sample ('D1). A brief review of laboratory quality control test results was undertaken. In summary, the accuracy and precision of the soil testing procedures, as inferred by the QA/QC data, is generally considered to be of sufficient standard to allow the data reported to be used to interpret contamination conditions.

The laboratory report sheets are provided in Appendix B.

## 9.2 Analytical Results

### 9.2.1 Contamination Testing

The results of chemical analysis undertaken on soil samples are summarised in Table 5.

The results of chemical analysis undertaken on groundwater samples are summarised in Table 6.

Table 5: Laboratory Results of Chemical Analysis of Soil

| Analyte                                                                | Units | PQL | CRC Care Direct Contact HSL-A | CRC Care Direct Contact Intrusive Maintenance Worker | NEPM 2013 EILs Res/Open Space Aged | NEPM 2013 Table 1A(1) Hills Res A Soil | NSW EPA 2014 - General Solid Waste CT1 (No TCLP) | NSW EPA 2014 - Restricted Solid Waste CT2 (No TCLP) | NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand |  |  |  | NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil | Field_ID           |  | 101       | 102       | 103       | 01        | 104       | 105       | 106       | 106       | 107       | 107       | 108       | 109       | 110       | 111       | 113       | 114       | 115       | 116  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------------------------------------------------|-------|-----|-------------------------------|------------------------------------------------------|------------------------------------|----------------------------------------|--------------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------|--|--|--|-------------------------------------------------------|--------------------|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------|--|--|--|--|--|--|--|--|--|--|--|--|--|
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       | Sample_Depth_Range |  | 0.2       | 0.05      | 0.05      | 0.05      | 1         | 0.1       | 0.26      | 0.5       | 0.1       | 0.22      | 0.3       | 1         | 0.1       | 0-0.1     | 0.05      | 0.05      | 0.3       | 0.05 |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       | Sampled_Date-Time  |  | 1/07/2019 | 1/07/2019 | 1/07/2019 | 1/07/2019 | 1/07/2019 | 1/07/2019 | 1/07/2019 | 1/07/2019 | 1/07/2019 | 1/07/2019 | 1/07/2019 | 1/07/2019 | 1/07/2019 | 1/07/2019 | 1/07/2019 | 1/07/2019 | 1/07/2019 |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
| NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                        |       |     |                               |                                                      |                                    |                                        |                                                  |                                                     |                                                                   |  |  |  |                                                       |                    |  |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Table 6: Laboratory Results of Chemical Analysis of Groundwater**

| Analyte                     |                          | Units | PQL    | NEPM 2013 Table 1A(4) Res HSL A & B GW for Vapour Intrusion |        |        | NEPM 2013 Table 1C GILs, Fresh Waters | Field_ID                                | 201       | 202       | D1        |
|-----------------------------|--------------------------|-------|--------|-------------------------------------------------------------|--------|--------|---------------------------------------|-----------------------------------------|-----------|-----------|-----------|
|                             |                          |       |        |                                                             |        |        |                                       | LocCode                                 | 201       | 202       | 202       |
|                             |                          |       |        |                                                             |        |        |                                       | WellCode                                |           |           |           |
|                             |                          |       |        |                                                             |        |        |                                       | Sampled_Date-Time                       | 8/07/2019 | 8/07/2019 | 8/07/2019 |
|                             |                          |       |        | 2-4m                                                        | 4-8m   | >8m    |                                       | NEPM 2013 Table 1C GILs, Drinking Water |           |           |           |
| HM in water -               | Lead (Filtered)          | mg/L  | 0.001  |                                                             |        |        | 0.0034                                | 0.01                                    | <0.001    | <0.001    | <0.001    |
| PAHs in Water - Low Level   | Total Positive PAHs      | mg/L  |        |                                                             |        |        |                                       |                                         | 0         | 0         | 0         |
|                             | Acenaphthene             | mg/L  | 0.0001 |                                                             |        |        |                                       |                                         | <0.0001   | <0.0001   | <0.0001   |
|                             | Acenaphthylene           | mg/L  | 0.0001 |                                                             |        |        |                                       |                                         | <0.0001   | <0.0001   | <0.0001   |
|                             | Anthracene               | mg/L  | 0.0001 |                                                             |        |        |                                       |                                         | <0.0001   | <0.0001   | <0.0001   |
|                             | Benz(a)anthracene        | mg/L  | 0.0001 |                                                             |        |        |                                       |                                         | <0.0001   | <0.0001   | <0.0001   |
|                             | Benzo(a) pyrene          | mg/L  | 0.0001 |                                                             |        |        |                                       | 0.00001                                 | <0.0001   | <0.0001   | <0.0001   |
|                             | Benzo(a)pyrene TEQ       | ug/L  | 0.5    |                                                             |        |        |                                       |                                         | <0.5      | <0.5      | <0.5      |
|                             | Benzo(b,j+k)fluoranthene | mg/kg | 0.0002 |                                                             |        |        |                                       |                                         | <0.0002   | <0.0002   | <0.0002   |
|                             | Benzo(g,h,i)perylene     | mg/L  | 0.0001 |                                                             |        |        |                                       |                                         | <0.0001   | <0.0001   | <0.0001   |
|                             | Chrysene                 | mg/L  | 0.0001 |                                                             |        |        |                                       |                                         | <0.0001   | <0.0001   | <0.0001   |
|                             | Dibenz(a,h)anthracene    | mg/L  | 0.0001 |                                                             |        |        |                                       |                                         | <0.0001   | <0.0001   | <0.0001   |
|                             | Fluoranthene             | mg/L  | 0.0001 |                                                             |        |        |                                       |                                         | <0.0001   | <0.0001   | <0.0001   |
|                             | Fluorene                 | mg/L  | 0.0001 |                                                             |        |        |                                       |                                         | <0.0001   | <0.0001   | <0.0001   |
|                             | Indeno(1,2,3-c,d)pyrene  | mg/L  | 0.0001 |                                                             |        |        |                                       |                                         | <0.0001   | <0.0001   | <0.0001   |
|                             | Naphthalene              | mg/L  | 0.0002 | NL                                                          | NL     | NL     | 0.016                                 |                                         | <0.0002   | <0.0002   | <0.0002   |
|                             | Phenanthrene             | mg/L  | 0.0001 |                                                             |        |        |                                       |                                         | <0.0001   | <0.0001   | <0.0001   |
|                             | Pyrene                   | mg/L  | 0.0001 |                                                             |        |        |                                       |                                         | <0.0001   | <0.0001   | <0.0001   |
| svTRH (C10-C40) in Water    | C10-C16                  | mg/L  | 0.05   |                                                             |        |        |                                       |                                         | <0.05     | <0.05     | <0.05     |
|                             | C16-C34                  | mg/L  | 0.1    |                                                             |        |        |                                       |                                         | <0.1      | <0.1      | <0.1      |
|                             | C34-C40                  | mg/L  | 0.1    |                                                             |        |        |                                       |                                         | <0.1      | <0.1      | <0.1      |
|                             | F2-NAPHTHALENE           | mg/L  | 0.05   | NL 1                                                        | NL 1   | NL 1   |                                       |                                         | <0.05     | <0.05     | <0.05     |
|                             | C10 - C14                | mg/L  | 0.05   |                                                             |        |        |                                       |                                         | <0.05     | <0.05     | <0.05     |
|                             | C15 - C28                | mg/L  | 0.1    |                                                             |        |        |                                       |                                         | <0.1      | <0.1      | <0.1      |
|                             | C29-C36                  | mg/L  | 0.1    |                                                             |        |        |                                       |                                         | <0.1      | <0.1      | <0.1      |
| vTRH(C6-C10)/BTEXN in Water | Benzene                  | mg/L  | 0.001  | 0.8 4 5                                                     | 0.8 5  | 0.9 5  | 0.95                                  | 0.001                                   | <0.001    | <0.001    | <0.001    |
|                             | Ethylbenzene             | mg/L  | 0.001  | NL                                                          | NL     | NL     |                                       | 0.3                                     | <0.001    | <0.001    | <0.001    |
|                             | Naphthalene              | mg/L  | 0.001  | NL                                                          | NL     | NL     | 0.016                                 |                                         | <0.001    | <0.001    | <0.001    |
|                             | Toluene                  | mg/L  | 0.001  | NL                                                          | NL     | NL     |                                       | 0.8                                     | <0.001    | <0.001    | <0.001    |
|                             | C6 - C9                  | mg/L  | 0.01   |                                                             |        |        |                                       |                                         | <0.01     | <0.01     | <0.01     |
|                             | Xylene (m & p)           | mg/L  | 0.002  |                                                             |        |        |                                       |                                         | <0.002    | <0.002    | <0.002    |
|                             | Xylene (o)               | mg/L  | 0.001  |                                                             |        |        | 0.35                                  |                                         | 0.001     | <0.001    | <0.001    |
|                             | C6-C10 less BTEX (F1)    | mg/L  | 0.01   | NL 1 6                                                      | NL 1 6 | NL 1 6 |                                       |                                         | <0.01     | <0.01     | <0.01     |
|                             | C6-C10                   | mg/L  | 0.01   |                                                             |        |        |                                       |                                         | <0.01     | <0.01     | <0.01     |

Notes to Table 6:  
Sample D1 id duplicate sample of 202



## 10. Site Assessment Criteria (SAC)

### 10.1 Introduction

It is understood that the proposed development at Lot 100 DP1261496, Maitland Street, Muswellbrook NSW will comprise a primary or secondary school facility.

The Site Assessment Criteria (SAC) applied in the current investigation is informed by the CSM which identified human and ecological receptors to potential contamination on the site (refer to Section 6). Analytical results were assessed (as a Tier 1 assessment) against the SAC comprising the investigation and screening levels of Schedule B1, *National Environment Protection (Assessment of Site Contamination) Measure* 1999, as amended 2013 (NEPC, 2013). The NEPC guidelines are endorsed by the NSW EPA under the CLM Act 1997. Petroleum based health screening levels for direct contact have been adopted from the *Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) Technical Report no.10 Health screening levels for petroleum hydrocarbons in soil and groundwater* (2011) as referenced by NEPC (2013).

The investigation and screening levels are applicable to generic land use settings and include consideration of, where relevant, the soil type and the depth of contamination. The investigation and screening levels are not intended to be used as clean up levels. Rather, they establish concentrations above which further appropriate investigation (e.g. Tier 2 assessment) should be undertaken. They are intentionally conservative and are based on a reasonable worst-case scenario.

The investigation and screening levels applied in the current investigation comprise levels adopted for a generic low density residential landuse which also applies to primary schools.

### 10.2 Soils

#### 10.2.1 Health Investigation and Screening Levels

The generic HIL and HSL for residential landuse (HIL A and HSL A) are considered to be appropriate for the assessment of contamination at the site. The adopted soil HIL and HSL for the potential contaminants of concern are presented in Table 7.

**Table 7: HIL and HSL in mg/kg Unless Otherwise Indicated**

|                        | <b>Contaminants</b>              | <b>HIL- A</b> | <b>HSL- A<sup>3</sup></b> |
|------------------------|----------------------------------|---------------|---------------------------|
| <b>Metals</b>          | Arsenic                          | 100           | NC                        |
|                        | Cadmium                          | 20            | NC                        |
|                        | Chromium (VI)                    | 100           | NC                        |
|                        | Copper                           | 6000          | NC                        |
|                        | Lead                             | 300           | NC                        |
|                        | Manganese                        | 3800          | NC                        |
|                        | Mercury (inorganic)              | 40            | NC                        |
|                        | Nickel                           | 400           | NC                        |
|                        | Zinc                             | 7400          | NC                        |
| <b>PAH</b>             | Benzo(a)pyrene TEQ <sup>1</sup>  | 3             | NC                        |
|                        | Naphthalene                      | NC            | 3                         |
|                        | Total PAH                        | 300           | NC                        |
| <b>TRH</b>             | C6 – C10 (less BTEX) [F1]        | NC            | 45                        |
|                        | >C10-C16 (less Naphthalene) [F2] | NC            | 110                       |
|                        | >C16-C34 [F3]                    | NC            | NC                        |
|                        | >C34-C40 [F4]                    | NC            | NC                        |
| <b>BTEX</b>            | Benzene                          | NC            | 0.5                       |
|                        | Toluene                          | NC            | 160                       |
|                        | Ethylbenzene                     | NC            | 55                        |
|                        | Xylenes                          | NC            | 40                        |
| <b>OCP/<br/>OPP</b>    | Aldrin + Dieldrin                | 6             | NC                        |
|                        | Chlordane                        | 50            | NC                        |
|                        | DDT+DDE+DDD                      | 240           | NC                        |
|                        | Endosulfan                       | 270           | NC                        |
|                        | Endrin                           | 10            | NC                        |
|                        | Heptachlor                       | 6             | NC                        |
|                        | Methoxychlor                     | 300           | NC                        |
|                        | Chlorpyrifos                     | 160           | NC                        |
| <b>PCB<sup>4</sup></b> |                                  | 1             | NC                        |

Notes to Table 7:

- 1 Sum of carcinogenic PAH
- 2 The soil saturation concentration (C<sub>sat</sub>) is defined as the soil concentration at which the porewater phase cannot dissolve any more of an individual chemical. The soil vapour that is in equilibrium with the porewater will be at its maximum. If the derived soil HSL exceeds C<sub>sat</sub>, a soil vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario. For these scenarios, no HSL is presented for these chemicals and the HSL is shown as 'not limiting' or 'NL'.
- 3 The HSL have been calculated for a potential vapour intrusion pathway, a sand soil (conservative approach based on a mix of sandy and clayey fill encountered) and an assumed depth to contamination of 0 m to <1 m.
- 4 non dioxin-like PCBs only

As shown in Table 7, the adopted HSLs are predicated on a potential vapour intrusion pathway, as identified in the Conceptual Site Model (CSM). Although the CSM also identifies a direct contact pathway, and construction worker receptors, the corresponding HSLs are significantly higher than those for the vapour intrusion pathway and are therefore not drivers for further assessment and / or remediation. As such the direct contact and intrusive maintenance worker HSLs have not been listed.

### 10.2.2 Ecological Investigation Levels

EIL and Added Contaminant Limits (ACLs), where appropriate, have been derived in NEPC (2013) for only a short list of contaminants comprising As, Cu, Cr (III), DDT, naphthalene, Ni, Pb and Zn. The adopted EILs, derived using the *Interactive (Excel) Calculation Spreadsheet* (Standing Council on Environment and Water (SCEW) website (<http://www.scew.gov.au/node/941>)) are shown in the following Table 8.

**Table 8: EIL in mg/kg**

| Analyte |              | EIL  | Comments                                                                                                                                                                                                                                                                                                        |
|---------|--------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metals  | Arsenic      | 100  | <b>Adopted parameters</b><br>pH = 6 (conservative value in the absence of lab testing)<br>CEC = 5 cmol <sub>c</sub> /kg (conservative value in the absence of lab testing)<br>assumed clay content 5% in filling (conservative)<br>"Aged" (>2 years) source of contamination<br>high for traffic volumes in NSW |
|         | Copper       | 110  |                                                                                                                                                                                                                                                                                                                 |
|         | Nickel       | 35   |                                                                                                                                                                                                                                                                                                                 |
|         | Chromium III | 320  |                                                                                                                                                                                                                                                                                                                 |
|         | Lead         | 1100 |                                                                                                                                                                                                                                                                                                                 |
|         | Zinc         | 310  |                                                                                                                                                                                                                                                                                                                 |
| PAH     | Naphthalene  | 170  |                                                                                                                                                                                                                                                                                                                 |

### 10.2.3 Ecological Screening Levels

ESL are used to assess the risk of selected petroleum hydrocarbon compounds, BTEX and benzo(a)pyrene to terrestrial ecosystems. The adopted ESL are shown in the following Table 9.

**Table 9: ESL in mg/kg**

| Analyte |                                  | ESL <sup>1</sup> | Comments                                                                                   |
|---------|----------------------------------|------------------|--------------------------------------------------------------------------------------------|
| TRH     | C6 – C10 (less BTEX) [F1]        | 180*             | All ESLs are low reliability apart from those marked with * which are moderate reliability |
|         | >C10-C16 (less Naphthalene) [F2] | 120*             |                                                                                            |
|         | >C16-C34 [F3]                    | 300              |                                                                                            |
|         | >C34-C40 [F4]                    | 2800             |                                                                                            |
| BTEX    | Benzene                          | 50               |                                                                                            |
|         | Toluene                          | 85               |                                                                                            |
|         | Ethylbenzene                     | 70               |                                                                                            |
|         | Xylenes                          | 105              |                                                                                            |
| PAH     | Benzo(a)pyrene                   | 0.7              |                                                                                            |

Notes to Table 9:

<sup>1</sup> The ESL have been calculated for a coarse soil based on the upper silty sandy filling being the predominant contaminated soil type and Urban residential and public open space land use

### 10.2.4 Management Limits

In addition to appropriate consideration and application of the HSL and ESL, there are additional considerations which reflect the nature and properties of petroleum hydrocarbons, including:

- Formation of observable light non-aqueous phase liquids (LNAPL);
- Fire and explosion hazards;
- Effects on buried infrastructure e.g. penetration of, or damage to, in-ground services.

The adopted management limits from Schedule B1 of NEPC (2013) are shown in the following Table 10.

**Table 10: Management Limits in mg/kg**

| <b>Analyte</b> |                                          | <b>Management Limit</b> |                                                                                                                                                                                                                                                              |
|----------------|------------------------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TRH</b>     | C <sub>6</sub> – C <sub>10</sub> (F1) #  | 700                     | The management limits have been calculated for a coarse soil based on sandy fill being the predominant soil type at surface and residential landuse. This assumption is conservative due to the mix of sandy and clayey soils present within the stockpiles. |
|                | >C <sub>10</sub> -C <sub>16</sub> (F2) # | 1000                    |                                                                                                                                                                                                                                                              |
|                | >C <sub>16</sub> -C <sub>34</sub> (F3)   | 2500                    |                                                                                                                                                                                                                                                              |
|                | >C <sub>34</sub> -C <sub>40</sub> (F4)   | 10000                   |                                                                                                                                                                                                                                                              |

Notes to Table 10:

- # Separate management limits for BTEX and naphthalene are not available hence these have not been subtracted from the relevant fractions to obtain F1 and F2

### 10.2.5 Asbestos in Soil

Bonded ACM is the most common form of asbestos contamination across Australia, generally arising from:

- Inadequate removal and disposal practices during demolition of buildings containing asbestos products;
- Widespread dumping of asbestos products and asbestos containing fill on vacant land and development sites; and
- Commonly occurring in historical fill containing unsorted demolition materials.

Mining, manufacturing or distribution of asbestos products may result in sites being contaminated by friable asbestos including free fibres. Severe weathering or damage to bonded ACM may also result in the formation of friable asbestos comprising fibrous asbestos (FA) and/or asbestos fines (AF).

Asbestos only poses a risk to human health when asbestos fibres are made airborne and inhaled. If asbestos is bound in a matrix such as cement or resin, it is not readily made airborne except through substantial physical damage. Bonded ACM in sound condition represents a low human health risk, whilst both FA and AF materials have the potential to generate, or be associated with, free asbestos fibres. Consequently, FA and AF must be carefully managed to prevent the release of asbestos fibres into the air.

Schedule B2 of NEPC (2013) describes the recommended assessment process for asbestos in soil, commencing with a preliminary assessment, looking into the site history and conditions and therefore the propensity for asbestos to be present. The preliminary assessment may or may not include sampling and testing. A detailed assessment of asbestos contamination is recommended in NEPC (2013) under the following circumstances:

- To resolve uncertain findings from the preliminary assessment (eg the extent, quality and quantity of asbestos in soil is not known and the potential for asbestos is identified); and / or
- The remediation and management approach requires asbestos contamination to be fully delineated and assessed (eg asbestos contamination is to be relocated and contained); and / or
- To assist in assessing the likely effectiveness of alternative remediation and management strategies; and / or
- Land uses are to be determined and delineated according to the extent and nature of the asbestos contamination.

The previous assessment findings are used as a tool to assess the likelihood of finding asbestos in soil at the site, and the form of asbestos that may occur. The lack of reported asbestos at a sample location does not necessarily mean that asbestos is not present at the location.

The health screening levels for asbestos for this assessment are presented in Table 11 below:

**Table 11: Health Screening Levels (HSLs) in mg/kg**

| <b>Form of Asbestos</b> | <b>Health Screening Level – Residential A<br/>(including day care centres) (w/w)</b> |
|-------------------------|--------------------------------------------------------------------------------------|
| Bonded ACM              | 0.01%                                                                                |
| AF                      | 0.001%                                                                               |

### 10.2.6 Waste Classification

The results of chemical testing were also compared against NSW EPA Waste Classification Guidelines (EPA, 2014) to assess possible off-site disposal options to a licenced facility (if required).

### 10.2.7 Groundwater

The Groundwater Investigation Levels (GILs) adopted in NEPC (2013) are based on:

- ANZAST (2018), 'Australian and New Zealand Guidelines for Fresh and Marine Water Quality' (Ref 0), formerly ANZECC (2000), 'Australian and New Zealand Guidelines for Fresh and Marine Water Quality'; and
- NHMRC (2015), 'Australian Drinking Water Guidelines 6, 2011', updated March 2015.



The potential receptors of impacted groundwater from the site include:

- Current occupiers of the site (i.e. employees, contractors, visitors);
- Future occupiers of the site (e.g. workers, visitors, students);
- Workers conducting excavations, construction or maintenance works within the site or nearby the site (impacted groundwater);
- Workers and users from surrounding properties (vapours associated with groundwater impacts);
- Workers and users of down gradient properties which may utilise abstracted groundwater; and
- The fresh water ecosystems of Muscle Creek.

### 10.3 Groundwater

The potential receptors of impacted groundwater from an up gradient source (service station) include:

- Workers conducting excavations, construction or maintenance works within the site or nearby the site (impacted groundwater);
- Down-gradient groundwater users (if any). It is noted that there is no registered groundwater bores between the site and the service station.

#### 10.3.1 Groundwater Investigation Levels

The GIL adopted in NEPC (2013) are based on:

- *Australian Drinking Water Guidelines 2011 (ADWG)*;
- *Guidelines for Managing Risk in Recreational Waters 2008 (GMRRW)*;
- *National water quality management strategy. Australian and New Zealand guidelines for fresh and marine water quality 2000 (ANZECC & ARMCANZ)*.

The adopted GIL for the analytes included in the assessment (where applicable), and the corresponding source documents, are shown in Table 13.

**Table 12: GIL (in µg/L unless otherwise stated)**

| <b>Analyte</b> |                | <b>NEPC (2013)<br/>Fresh Waters <sup>2</sup></b> | <b>NEPC (2013)<br/>Drinking Water</b> |
|----------------|----------------|--------------------------------------------------|---------------------------------------|
| Metals         | Lead           | 3.4                                              | 10                                    |
| PAH            | Naphthalene    | 16                                               | NC                                    |
|                | Benzo(a)pyrene | 0.1                                              | 0.01                                  |
|                | Anthracene     | 0.01                                             | NC                                    |
|                | Fluoranthene   | 1                                                | NC                                    |
|                | Phenanthrene   | 0.6                                              | NC                                    |
| TRH            | TRH            | NC                                               | NC                                    |
| BTEX           | Benzene        | 950                                              | 1                                     |
|                | Toluene        | NC                                               | 800                                   |
|                | Xylene (o)     | 350                                              | NC                                    |

Notes to Table 12:

1 In cases where no high reliability trigger values are provided, the low reliability trigger values provided in ANZECC &amp; ARMCANZ (2000) have been used as screening levels

2 Investigation levels apply to typically slightly-moderately disturbed systems

NC – No Criteria

### 10.3.2 Health Screening Levels

The generic HSL are considered to be appropriate for the assessment of contamination at the site. Given the proposed land use the adopted HSLs are HSL-A and B – low density residential (primary school).

The adopted groundwater HSL for vapour intrusion, from Table 1A(4), Schedule B1 of NEPC (2013) are shown in the following Table 13.

**Table 13: HSL (µg/L)**

| Analyte |                                                           | HSL-A | The HSL have been calculated for a sand soil based on sands being the predominant soil type (conservative) and an assumed depth to contamination of 4 m to <8 m. |
|---------|-----------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TRH     | C <sub>6</sub> – C <sub>10</sub> (less BTEX) [F1]         | 1000  |                                                                                                                                                                  |
|         | >C <sub>10</sub> -C <sub>16</sub> (less Naphthalene) [F2] | 1000  |                                                                                                                                                                  |
| BTEX    | Benzene                                                   | 800   |                                                                                                                                                                  |
|         | Toluene                                                   | NL    |                                                                                                                                                                  |
|         | Ethylbenzene                                              | NL    |                                                                                                                                                                  |
|         | Xylene                                                    | NL    |                                                                                                                                                                  |
| PAH     | Naphthalene                                               | NL    |                                                                                                                                                                  |

Note to Table 13:

NL - The solubility limit is defined as the groundwater concentration at which the water cannot dissolve any more of an individual chemical based on a petroleum mixture. The soil vapour which is in equilibrium with the groundwater will be at its maximum. If the derived groundwater HSL exceeds the water solubility limit, a soil-vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for a given scenario. For these scenarios no HSL is presented for these chemicals. These are denoted as not limiting 'NL'.

It is noted that the generic HSL are not appropriate when the depth to groundwater impact is less than 2 m. Under these circumstances a site specific risk assessment may be needed. The adopted HSLs have therefore been used for preliminary assessment purposes only.

## 11. Assessment of Contamination

The results of chemical analysis indicate the following:

### Soil

The results of chemical analysis from the current investigation indicated the soil samples tested were generally within the health investigation levels for low density residential land use (primary schools) (HIL-A/EIL), with the exception of one exceedance of the landuse criteria (ecological and human health health). This sample was taken within a gravel path in the north eastern portion of the site, and may be associated with a former asphalt seal layer within the path.

The results of chemical analysis on soils also indicated the majority of soil samples tested were within the NSW EPA "General Solid Waste" criteria (EPA, 2014) based on total contaminant concentrations with the exception of two samples in the upper materials (Pits 106 and 114) and one sample in the silty clay at Pit 115 at 0.3 m. It is noted that leachability testing was not conducted on the samples which exceeded GSW to confirm waste classification.

Testing of the localised fibro fragment encountered onsite and surrounding soils indicated the absence of asbestos containing materials (ACM).

### Groundwater

The results of groundwater testing indicated the absence of detectable concentrations of hydrocarbons and lead in the samples tested with the exception of a trace xylene concentration in Bore 201 equal to the laboratory detection limit but below the criteria.

## 12. Comments / Recommendations

The results of the DSI have identified the following:

- Presence of shallow filling within majority of test pits / bores;
- Presence of ash within the upper fill materials in Pits 103, 107 and 111;
- Presence of asphalt lenses in Pit 106 exceeding landuse criteria;
- Fill materials generally meet the criteria for classification as 'General Solid Waste' based on total concentrations;
- Elevated PAH, associated with asphalt lenses within the upper fill materials with the gravel path (Pit 106);
- General absence of impacts from the nearby petrol station to groundwater quality along the south-east site boundary.

In summary, development of the site will required localised remediation of PAH impacted soils associated with the asphalt lenses within the gravel path. The extent of impact has also not been confirmed, however, it is likely to be associated with the gravel path within the site.

The site is considered to be suitable for the proposed development, subject to localised remediation / of contamination and regulatory approvals.

## 13. References

J K Environments (2019), Preliminary Contamination Assessment, Lot 62, Maitland Street, Muswellbrook, NSW, 30 April 2019.

ANZECC (2000), 'Australian and New Zealand Guidelines for Fresh and Marine Water Quality', Australian and New Zealand Environment and Conservation Council, October 2000.

ANZAST (2018), 'Australian and New Zealand Guidelines for Fresh and Marine Water Quality', Australian Government Initiative, August 2018.

Contaminated Land Management Act 1997 (NSW).

National Environment Protection Council (2013), 'National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013', 11 April 2013.

NSW EPA Contaminated Sites (2011), 'Guidelines for Consultants Reporting on Contaminated Sites', August 2011.

NHMRC/NRMMC (2015), 'Australian Drinking Water Guidelines 6, 2011', National Health and Medical Research Council, National Resource Management Ministerial Council, Commonwealth of Australia, Canberra, Version 3.1, Updated March 2015.

NSW EPA (2014) 'Waste Classification Guidelines, Part 1: Classifying Waste', November 2014.

## 14. Limitations

Douglas Partners (DP) has prepared this report for this project at Lot 100 DP1261496, Maitland Street, Muswellbrook NSW with reference to DP's email proposal NCL190331 dated 5 June 2019 and acceptance received from Pacific Brook Christian School. The work was carried out under an agreed Professional Services Contract Agreement. This report is provided for the exclusive use of Pacific Brook Christian School for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

Although the sampling plan adopted for this investigation is considered appropriate to achieve the stated project objectives, there are necessarily parts of the site that have not been sampled and analysed. This is either due to undetected variations in ground conditions or to parts of the site being inaccessible and not available for inspection/sampling (i.e. due to concrete pavements). It is therefore considered possible that HBM, including asbestos, may be present in unobserved or untested parts of the site, between and beyond sampling locations, and hence no warranty can be given that asbestos is not present.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the environmental components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

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**Douglas Partners Pty Ltd**



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## **Appendix A**

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About This Report  
Sampling Methods  
Soil Descriptions  
Symbols and Abbreviations  
Borehole Logs (Bores 201 to 202)  
Test Pit Logs (Pits 101 to 116)

# About this Report

# Douglas Partners



## Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

## Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

## Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

## Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;

- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

## Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

# *About this Report*

## **Site Anomalies**

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

## **Information for Contractual Purposes**

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

## **Site Inspection**

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.



### Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

### Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

### Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

### Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low

reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

### Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

### Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

### Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of, say, 4, 6 and 7 as:  
4,6,7  
N=13
- In the case where the test is discontinued before the full penetration depth, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm as:  
15, 30/40 mm

# *Sampling Methods*

The results of the SPT tests can be related empirically to the engineering properties of the soils.

## **Dynamic Cone Penetrometer Tests /**

### **Perth Sand Penetrometer Tests**

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.



## Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are generally based on Australian Standard AS1726:2017, Geotechnical Site Investigations. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

## Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

| Type    | Particle size (mm) |
|---------|--------------------|
| Boulder | >200               |
| Cobble  | 63 - 200           |
| Gravel  | 2.36 - 63          |
| Sand    | 0.075 - 2.36       |
| Silt    | 0.002 - 0.075      |
| Clay    | <0.002             |

The sand and gravel sizes can be further subdivided as follows:

| Type          | Particle size (mm) |
|---------------|--------------------|
| Coarse gravel | 19 - 63            |
| Medium gravel | 6.7 - 19           |
| Fine gravel   | 2.36 – 6.7         |
| Coarse sand   | 0.6 - 2.36         |
| Medium sand   | 0.21 - 0.6         |
| Fine sand     | 0.075 - 0.21       |

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

The proportions of secondary constituents of soils are described as follows:

In fine grained soils (>35% fines)

| Term      | Proportion of sand or gravel | Example                   |
|-----------|------------------------------|---------------------------|
| And       | Specify                      | Clay (60%) and Sand (40%) |
| Adjective | >30%                         | Sandy Clay                |
| With      | 15 – 30%                     | Clay with sand            |
| Trace     | 0 - 15%                      | Clay with trace sand      |

In coarse grained soils (>65% coarse)

- with clays or silts

| Term      | Proportion of fines | Example                   |
|-----------|---------------------|---------------------------|
| And       | Specify             | Sand (70%) and Clay (30%) |
| Adjective | >12%                | Clayey Sand               |
| With      | 5 - 12%             | Sand with clay            |
| Trace     | 0 - 5%              | Sand with trace clay      |

In coarse grained soils (>65% coarse)

- with coarser fraction

| Term      | Proportion of coarser fraction | Example                     |
|-----------|--------------------------------|-----------------------------|
| And       | Specify                        | Sand (60%) and Gravel (40%) |
| Adjective | >30%                           | Gravelly Sand               |
| With      | 15 - 30%                       | Sand with gravel            |
| Trace     | 0 - 15%                        | Sand with trace gravel      |

The presence of cobbles and boulders shall be specifically noted by beginning the description with 'Mix of Soil and Cobbles/Boulders' with the word order indicating the dominant first and the proportion of cobbles and boulders described together.



# Soil Descriptions

## Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

| Description | Abbreviation | Undrained shear strength (kPa) |
|-------------|--------------|--------------------------------|
| Very soft   | VS           | <12                            |
| Soft        | S            | 12 - 25                        |
| Firm        | F            | 25 - 50                        |
| Stiff       | St           | 50 - 100                       |
| Very stiff  | VSt          | 100 - 200                      |
| Hard        | H            | >200                           |
| Friable     | Fr           | -                              |

## Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

| Relative Density | Abbreviation | Density Index (%) |
|------------------|--------------|-------------------|
| Very loose       | VL           | <15               |
| Loose            | L            | 15-35             |
| Medium dense     | MD           | 35-65             |
| Dense            | D            | 65-85             |
| Very dense       | VD           | >85               |

## Soil Origin

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Extremely weathered material – formed from in-situ weathering of geological formations. Has soil strength but retains the structure or fabric of the parent rock;
- Alluvial soil – deposited by streams and rivers;

- Estuarine soil – deposited in coastal estuaries;
- Marine soil – deposited in a marine environment;
- Lacustrine soil – deposited in freshwater lakes;
- Aeolian soil – carried and deposited by wind;
- Colluvial soil – soil and rock debris transported down slopes by gravity;
- Topsoil – mantle of surface soil, often with high levels of organic material.
- Fill – any material which has been moved by man.

## Moisture Condition – Coarse Grained Soils

For coarse grained soils the moisture condition should be described by appearance and feel using the following terms:

- Dry (D) Non-cohesive and free-running.
- Moist (M) Soil feels cool, darkened in colour.  
Soil tends to stick together.  
Sand forms weak ball but breaks easily.
- Wet (W) Soil feels cool, darkened in colour.  
Soil tends to stick together, free water forms when handling.

## Moisture Condition – Fine Grained Soils

For fine grained soils the assessment of moisture content is relative to their plastic limit or liquid limit, as follows:

- 'Moist, dry of plastic limit' or 'w < PL' (i.e. hard and friable or powdery).
- 'Moist, near plastic limit' or 'w ≈ PL' (i.e. soil can be moulded at moisture content approximately equal to the plastic limit).
- 'Moist, wet of plastic limit' or 'w > PL' (i.e. soils usually weakened and free water forms on the hands when handling).
- 'Wet' or 'w ≈ LL' (i.e. near the liquid limit).
- 'Wet' or 'w > LL' (i.e. wet of the liquid limit).

# Symbols & Abbreviations

## Douglas Partners



### Introduction

These notes summarise abbreviations commonly used on borehole logs and test pit reports.

### Drilling or Excavation Methods

|      |                          |
|------|--------------------------|
| C    | Core drilling            |
| R    | Rotary drilling          |
| SFA  | Spiral flight augers     |
| NMLC | Diamond core - 52 mm dia |
| NQ   | Diamond core - 47 mm dia |
| HQ   | Diamond core - 63 mm dia |
| PQ   | Diamond core - 81 mm dia |

### Water

|   |             |
|---|-------------|
| ▷ | Water seep  |
| ▽ | Water level |

### Sampling and Testing

|                 |                                |
|-----------------|--------------------------------|
| A               | Auger sample                   |
| B               | Bulk sample                    |
| D               | Disturbed sample               |
| E               | Environmental sample           |
| U <sub>50</sub> | Undisturbed tube sample (50mm) |
| W               | Water sample                   |
| pp              | Pocket penetrometer (kPa)      |
| PID             | Photo ionisation detector      |
| PL              | Point load strength Is(50) MPa |
| S               | Standard Penetration Test      |
| V               | Shear vane (kPa)               |

### Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

### Defect Type

|     |                 |
|-----|-----------------|
| B   | Bedding plane   |
| Cs  | Clay seam       |
| Cv  | Cleavage        |
| Cz  | Crushed zone    |
| Ds  | Decomposed seam |
| F   | Fault           |
| J   | Joint           |
| Lam | Lamination      |
| Pt  | Parting         |
| Sz  | Sheared Zone    |
| V   | Vein            |

### Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

|    |                |
|----|----------------|
| h  | horizontal     |
| v  | vertical       |
| sh | sub-horizontal |
| sv | sub-vertical   |

### Coating or Infilling Term

|     |          |
|-----|----------|
| cln | clean    |
| co  | coating  |
| he  | healed   |
| inf | infilled |
| stn | stained  |
| ti  | tight    |
| vn  | veneer   |

### Coating Descriptor

|     |              |
|-----|--------------|
| ca  | calcite      |
| cbs | carbonaceous |
| cly | clay         |
| fe  | iron oxide   |
| mn  | manganese    |
| slt | silty        |

### Shape

|    |            |
|----|------------|
| cu | curved     |
| ir | irregular  |
| pl | planar     |
| st | stepped    |
| un | undulating |

### Roughness

|    |              |
|----|--------------|
| po | polished     |
| ro | rough        |
| sl | slickensided |
| sm | smooth       |
| vr | very rough   |

### Other

|     |            |
|-----|------------|
| fg  | fragmented |
| bnd | band       |
| qtz | quartz     |

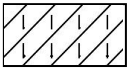
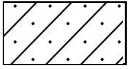
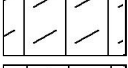
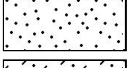
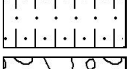
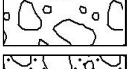
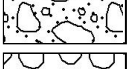
# Symbols & Abbreviations

## Graphic Symbols for Soil and Rock

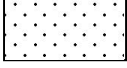
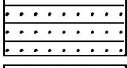
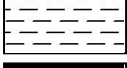
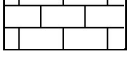
### General

|                                                                                   |           |
|-----------------------------------------------------------------------------------|-----------|
|  | Asphalt   |
|  | Road base |
|  | Concrete  |
|  | Filling   |

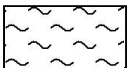
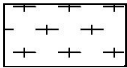
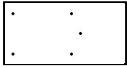
### Soils

|                                                                                     |                   |
|-------------------------------------------------------------------------------------|-------------------|
|    | Topsoil           |
|    | Peat              |
|   | Clay              |
|  | Silty clay        |
|  | Sandy clay        |
|  | Gravelly clay     |
|  | Shaly clay        |
|  | Silt              |
|  | Clayey silt       |
|  | Sandy silt        |
|  | Sand              |
|  | Clayey sand       |
|  | Silty sand        |
|  | Gravel            |
|  | Sandy gravel      |
|  | Cobbles, boulders |
|  | Talus             |

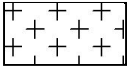
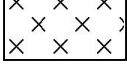
### Sedimentary Rocks

|                                                                                      |                            |
|--------------------------------------------------------------------------------------|----------------------------|
|    | Boulder conglomerate       |
|    | Conglomerate               |
|    | Conglomeratic sandstone    |
|    | Sandstone                  |
|    | Siltstone                  |
|    | Laminite                   |
|    | Mudstone, claystone, shale |
|   | Coal                       |
|  | Limestone                  |

### Metamorphic Rocks

|                                                                                      |                         |
|--------------------------------------------------------------------------------------|-------------------------|
|  | Slate, phyllite, schist |
|  | Gneiss                  |
|  | Quartzite               |

### Igneous Rocks

|                                                                                      |                            |
|--------------------------------------------------------------------------------------|----------------------------|
|  | Granite                    |
|  | Dolerite, basalt, andesite |
|  | Dacite, epidote            |
|  | Tuff, breccia              |
|  | Porphyry                   |

# BOREHOLE LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 301989  
**NORTHING:** 6426905  
**DIP/AZIMUTH:** 90°/--

**BORE No:** 201  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                                                                      | Graphic Log | Sampling & In Situ Testing |       |        |                    | Water | Well Construction Details                                                                   |  |
|----|-----------|--------------------------------------------------------------------------------------------|-------------|----------------------------|-------|--------|--------------------|-------|---------------------------------------------------------------------------------------------|--|
|    |           |                                                                                            |             | Type                       | Depth | Sample | Results & Comments |       |                                                                                             |  |
|    | 0.3       | TOPSOIL - Brown clayey silt topsoil with trace rootlets                                    |             | D                          | 0.2   | E      |                    |       | Stickup = 1m<br>From 0m to 0.1m, bentonite plug                                             |  |
|    |           | SILTY CLAY - Very stiff brown silty clay, M<Wp                                             |             | D                          | 0.5   | E      |                    |       |                                                                                             |  |
|    | 1         | At 0.9m some fine sized gravel<br>From 1.0m dark brown                                     |             | D                          | 1.0   | E      |                    |       |                                                                                             |  |
|    |           |                                                                                            |             | D                          | 1.5   | E      |                    |       | From 0.1m to 3m, backfill                                                                   |  |
|    | 2.1       | SANDY GRAVEL - (Loose) brown fine to medium grained sandy fine to coarse sized gravel, dry |             | D                          | 2.0   | E      |                    |       | From 0m to 4m, 50mm diameter Class 18 PVC blank casing                                      |  |
|    | 2.3       | CLAY - (Stiff) brown clay with trace fine grained sand, M<Wp                               |             | D                          | 2.5   | E      |                    |       |                                                                                             |  |
|    | 3         |                                                                                            |             | D                          | 3.0   | E      |                    |       |                                                                                             |  |
|    | 3.4       | CLAYEY SAND - (Medium dense) brown clayey fine grained sand, with trace fine sized gravel  |             | D                          | 3.5   | E      |                    |       | From 3m to 3.5m, bentonite plug                                                             |  |
|    | 4         |                                                                                            |             | D                          | 4.0   | E      |                    |       |                                                                                             |  |
|    |           |                                                                                            |             | D                          | 4.5   | E      |                    |       |                                                                                             |  |
|    | 5         |                                                                                            |             | D                          | 5.0   | E      |                    |       |                                                                                             |  |
|    |           |                                                                                            |             | D                          | 5.5   | E      |                    |       | From 3.5m to 7m, gravel<br>From 4m to 7m, 50mm diameter Class 18 PVC machine slotted screen |  |
|    | 5.7       | CLAY - (Stiff) pale grey mottled orange brown clay, M<Wp                                   |             | D                          | 6.0   | E      |                    |       |                                                                                             |  |
|    | 6         |                                                                                            |             | D                          | 6.5   | E      |                    |       |                                                                                             |  |
|    | 7         |                                                                                            |             | D                          | 7.0   | E      |                    |       |                                                                                             |  |
|    | 7.2       | Bore discontinued at 7.2m, refusal                                                         |             |                            |       |        |                    |       | End cap at 7m                                                                               |  |
|    | 8         |                                                                                            |             |                            |       |        |                    |       |                                                                                             |  |
|    | 9         |                                                                                            |             |                            |       |        |                    |       |                                                                                             |  |

**RIG:** Geoprobe

**DRILLER:** Terratest

**LOGGED:** Lambert

**CASING:** Nil

**TYPE OF BORING:** Push tube rig

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

## SAMPLING & IN SITU TESTING LEGEND

|     |                      |   |                         |       |                                        |
|-----|----------------------|---|-------------------------|-------|----------------------------------------|
| A   | Auger sample         | G | Gas sample              | PID   | Photo ionisation detector (ppm)        |
| B   | Bulk sample          | P | Piston sample           | PL(A) | Point load axial test (s(50) (MPa)     |
| BLK | Block sample         | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test (s(50) (MPa) |
| C   | Core drilling        | W | Water sample            | pp    | Pocket penetrometer (kPa)              |
| D   | Disturbed sample     | W | Water seep              | S     | Standard penetration test              |
| E   | Environmental sample | W | Water level             | V     | Shear vane (kPa)                       |

# BOREHOLE LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 302015  
**NORTHING:** 6426934  
**DIP/AZIMUTH:** 90°/--

**BORE No:** 202  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                                                                         | Graphic Log | Sampling & In Situ Testing |       |        |                    | Water | Well Construction Details |                                                                     |
|----|-----------|-----------------------------------------------------------------------------------------------|-------------|----------------------------|-------|--------|--------------------|-------|---------------------------|---------------------------------------------------------------------|
|    |           |                                                                                               |             | Type                       | Depth | Sample | Results & Comments |       |                           |                                                                     |
|    | 0.3       | TOPSOIL - Brown clayey silt topsoil with some rootlets                                        |             | D                          | 0.2   | E      |                    |       | Stickup = 0.6m            | From 0m to 0.1m, bentonite plug                                     |
|    |           | SILTY CLAY - (Very stiff) brown silty clay, M<Wp                                              |             | D                          | 0.5   | E      |                    |       |                           |                                                                     |
|    | 1         |                                                                                               |             | D                          | 1.0   | E      |                    |       |                           |                                                                     |
|    |           |                                                                                               |             | D                          | 1.5   | E      |                    |       |                           | From 0.1m to 2.4m, backfill                                         |
|    | 2         |                                                                                               |             | D                          | 2.0   | E      |                    |       |                           |                                                                     |
|    |           | From 2.5m trace fine sized gravel                                                             |             | D                          | 2.5   | E      |                    |       |                           | From 0m to 3.8m, 50mm diameter Class 18 PVC blank casing            |
|    | 2.9       |                                                                                               |             | D                          | 3.0   | E      |                    |       |                           | From 2.4m to 3m, bentonite plug                                     |
|    |           | SANDY GRAVEL - (Medium dense) fine to medium grained sandy fine to coarse sized gravel, moist |             | D                          | 3.5   | E      |                    |       |                           |                                                                     |
|    |           |                                                                                               |             | D                          | 4.0   | E      |                    |       |                           |                                                                     |
|    | 4         |                                                                                               |             | D                          | 4.5   | E      |                    |       |                           |                                                                     |
|    |           |                                                                                               |             | D                          | 5.0   | E      |                    |       |                           |                                                                     |
|    | 5         |                                                                                               |             | D                          | 5.5   | E      |                    |       |                           |                                                                     |
|    |           |                                                                                               |             | D                          | 6.0   | E      |                    |       |                           |                                                                     |
|    | 6         |                                                                                               |             | D                          | 6.5   | E      |                    |       |                           | From 3m to 9.8m, 5mm washed sand                                    |
|    | 6.6       |                                                                                               |             | D                          | 7.0   | E      |                    |       |                           | From 3.8 to 9.8m, 50mm diameter Class 18 PVC machine slotted screen |
|    |           | CLAY - (Stiff) ple grey mottled orange brown clay, with trace fine sized gravel, M<Wp         |             | D                          | 7.5   | E      |                    |       |                           |                                                                     |
|    | 7         |                                                                                               |             | D                          | 8.0   | E      |                    |       |                           |                                                                     |
|    |           | From 7.4m brown                                                                               |             | D                          | 8.5   | E      |                    |       |                           |                                                                     |
|    | 8         |                                                                                               |             | D                          | 9.0   | E      |                    |       |                           |                                                                     |
|    |           |                                                                                               |             | D                          | 9.5   | E      |                    |       |                           |                                                                     |
|    | 9         |                                                                                               |             | D                          | 10.0  | E      |                    |       |                           | End cap at 9.8m                                                     |
|    | 10.0      |                                                                                               |             | D                          | 10.0  | E      |                    |       |                           |                                                                     |

Bore discontinued at 10.0m, limit of investigation

**RIG:** Geoprobe

**DRILLER:** Terratest

**LOGGED:** Lambert

**CASING:** Nil

**TYPE OF BORING:** Auger (TC)

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

## SAMPLING & IN SITU TESTING LEGEND

|     |                      |   |                         |       |                                        |
|-----|----------------------|---|-------------------------|-------|----------------------------------------|
| A   | Auger sample         | G | Gas sample              | PID   | Photo ionisation detector (ppm)        |
| B   | Bulk sample          | P | Piston sample           | PL(A) | Point load axial test Is(50) (MPa)     |
| BLK | Block sample         | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test Is(50) (MPa) |
| C   | Core drilling        | W | Water sample            | pp    | Pocket penetrometer (kPa)              |
| D   | Disturbed sample     | W | Water seep              | S     | Standard penetration test              |
| E   | Environmental sample | W | Water level             | V     | Shear vane (kPa)                       |

# TEST PIT LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 301973  
**NORTHING:** 6426907

**PIT No:** 101  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                                                                                                 | Graphic Log | Sampling & In Situ Testing |       |        |                    | Water | Dynamic Penetrometer Test (blows per mm) |    |    |    |
|----|-----------|-----------------------------------------------------------------------------------------------------------------------|-------------|----------------------------|-------|--------|--------------------|-------|------------------------------------------|----|----|----|
|    |           |                                                                                                                       |             | Type                       | Depth | Sample | Results & Comments |       | 5                                        | 10 | 15 | 20 |
|    | 0.1       | FILLING - Generally comprising pale brown sandy silty topsoil filling, trace rootlets and fine subangular gravel, dry |             |                            |       |        |                    |       |                                          |    |    |    |
|    |           | SILTY CLAY - Medium plasticity pale brown silty clay, trace fine gravel, w>PL                                         |             | D                          | 0.2   | E      | PID<1              |       |                                          |    |    |    |
|    |           | From 0.4m red brown silty clay w>PL                                                                                   |             | D                          | 0.6   | E      | PID<1              |       |                                          |    |    |    |
| 1  | 1.0       | Pit discontinued at 1.0m, limit of investigation                                                                      |             |                            |       |        |                    |       |                                          |    |    |    |
| 2  |           |                                                                                                                       |             |                            |       |        |                    |       |                                          |    |    |    |

**RIG:** 6.5 tonne excavator with 450mm bucket teeth

**LOGGED:** Sebastian

**SURVEY DATUM:** MGA94

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- ☐ Sand Penetrometer AS1289.6.3.3  
☐ Cone Penetrometer AS1289.6.3.2

| SAMPLING & IN SITU TESTING LEGEND |                      |   |                         |       |                                         |
|-----------------------------------|----------------------|---|-------------------------|-------|-----------------------------------------|
| A                                 | Auger sample         | G | Gas sample              | PID   | Photo ionisation detector (ppm)         |
| B                                 | Bulk sample          | P | Piston sample           | PL(A) | Point load axial test $s(50)$ (MPa)     |
| BLK                               | Block sample         | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test $s(50)$ (MPa) |
| C                                 | Core drilling        | W | Water sample            | pp    | Pocket penetrometer (kPa)               |
| D                                 | Disturbed sample     | > | Water seep              | sp    | Standard penetration test               |
| E                                 | Environmental sample | ≡ | Water level             | V     | Shear vane (kPa)                        |



# TEST PIT LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 301983  
**NORTHING:** 6426951

**PIT No:** 102  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                                                                              | Graphic Log                                                                       | Sampling & In Situ Testing |       |        |                    | Water | Dynamic Penetrometer Test (blows per mm) |    |    |    |
|----|-----------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------|-------|--------|--------------------|-------|------------------------------------------|----|----|----|
|    |           |                                                                                                    |                                                                                   | Type                       | Depth | Sample | Results & Comments |       | 5                                        | 10 | 15 | 20 |
|    | 0.1       | FILLING - Generally comprising brown sandy silty filling, trace fine gravel and some rootlets, dry |  | D                          | 0.05  | E      | PID<1              |       |                                          |    |    |    |
|    |           | CLAYEY SILT - Medium to low plasticity pale grey and brown w<PL                                    |  |                            |       |        |                    |       |                                          |    |    |    |
|    | 0.4       |                                                                                                    |                                                                                   | D                          | 0.3   | E      | PID<1              |       |                                          |    |    |    |
|    |           | SILTY CLAY - Medium to high plasticity brown and red with rootlets, w>PL                           |  |                            |       |        |                    |       |                                          |    |    |    |
|    |           |                                                                                                    |                                                                                   | D                          | 0.7   | E      | PID<1              |       |                                          |    |    |    |
| 1  | 1.0       | Pit discontinued at 1.0m, limit of investigation                                                   |                                                                                   |                            |       |        |                    |       |                                          |    |    |    |
| 2  |           |                                                                                                    |                                                                                   |                            |       |        |                    |       |                                          |    |    |    |

**RIG:** 6.5 tonne excavator with 450mm bucket teeth

**LOGGED:** Sebastian

**SURVEY DATUM:** MGA94

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- ☐ Sand Penetrometer AS1289.6.3.3  
☐ Cone Penetrometer AS1289.6.3.2

| SAMPLING & IN SITU TESTING LEGEND |                      |   |                         |       |                                        |
|-----------------------------------|----------------------|---|-------------------------|-------|----------------------------------------|
| A                                 | Auger sample         | G | Gas sample              | PID   | Photo ionisation detector (ppm)        |
| B                                 | Bulk sample          | P | Piston sample           | PL(A) | Point load axial test (s(50) (MPa)     |
| BLK                               | Block sample         | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test (s(50) (MPa) |
| C                                 | Core drilling        | W | Water sample            | pp    | Pocket penetrometer (kPa)              |
| D                                 | Disturbed sample     | > | Water seep              | sp    | Standard penetration test              |
| E                                 | Environmental sample | ≡ | Water level             | S     | Shear vane (kPa)                       |
|                                   |                      | V |                         | V     | Shear vane (kPa)                       |

# TEST PIT LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 302001  
**NORTHING:** 6426950

**PIT No:** 103  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                                                                                  | Graphic Log | Sampling & In Situ Testing |       |        |                    | Water | Dynamic Penetrometer Test (blows per mm) |    |    |    |
|----|-----------|--------------------------------------------------------------------------------------------------------|-------------|----------------------------|-------|--------|--------------------|-------|------------------------------------------|----|----|----|
|    |           |                                                                                                        |             | Type                       | Depth | Sample | Results & Comments |       | 5                                        | 10 | 15 | 20 |
|    | 0.1       | FILLING - Generally comprising dark brown sandy silty topsoil filling with ash, and some rootlets, dry |             | D                          | 0.05  | E      | PID<1              |       |                                          |    |    |    |
|    |           | SILTY CLAY - Medium plasticity, pale brown, w<PL                                                       |             | D                          | 0.3   | E      | PID<1              |       |                                          |    |    |    |
|    |           | From 0.6m dark brown silty clay                                                                        |             | D                          | 0.7   | E      | PID<1              |       |                                          |    |    |    |
| 1  | 1.0       | Pit discontinued at 1.0m, limit of investigation                                                       |             |                            |       |        |                    |       |                                          |    |    |    |
| 2  |           |                                                                                                        |             |                            |       |        |                    |       |                                          |    |    |    |

**RIG:** 6.5 tonne excavator with 450mm bucket teeth

**LOGGED:** Sebastian

**SURVEY DATUM:** MGA94

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- ☐ Sand Penetrometer AS1289.6.3.3  
☐ Cone Penetrometer AS1289.6.3.2

| SAMPLING & IN SITU TESTING LEGEND |                      |   |                         |       |                                         |
|-----------------------------------|----------------------|---|-------------------------|-------|-----------------------------------------|
| A                                 | Auger sample         | G | Gas sample              | PID   | Photo ionisation detector (ppm)         |
| B                                 | Bulk sample          | P | Piston sample           | PL(A) | Point load axial test $s(50)$ (MPa)     |
| BLK                               | Block sample         | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test $s(50)$ (MPa) |
| C                                 | Core drilling        | W | Water sample            | pp    | Pocket penetrometer (kPa)               |
| D                                 | Disturbed sample     | W | Water seep              | sp    | Standard penetration test               |
| E                                 | Environmental sample | W | Water level             | S     | Shear vane (kPa)                        |

# TEST PIT LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 302021  
**NORTHING:** 6426911

**PIT No:** 104  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                                                                              | Graphic Log | Sampling & In Situ Testing |       |        |                    | Water | Dynamic Penetrometer Test (blows per mm) |    |    |    |
|----|-----------|----------------------------------------------------------------------------------------------------|-------------|----------------------------|-------|--------|--------------------|-------|------------------------------------------|----|----|----|
|    |           |                                                                                                    |             | Type                       | Depth | Sample | Results & Comments |       | 5                                        | 10 | 15 | 20 |
|    | 0.1       | FILLING - Generally comprising brown sandy silty filling, trace fine gravel and some rootlets, dry |             | D                          | 0.05  | E      | PID<1              |       |                                          |    |    |    |
|    |           | CLAYEY SILT - Medium to low plasticity pale grey and brown w<PL                                    |             | D                          | 0.3   | E      | PID<1              |       |                                          |    |    |    |
|    | 0.5       | SILTY CLAY - Medium plasticity brown silt trace rootlets, w>PL                                     |             | D                          | 1.0   | E      | PID<1              |       |                                          |    |    |    |
|    | 1.2       | Pit discontinued at 1.2m, limit of investigation                                                   |             |                            |       |        |                    |       |                                          |    |    |    |

**RIG:** 6.5 tonne excavator with 450mm bucket teeth

**LOGGED:** Sebastian

**SURVEY DATUM:** MGA94

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- ☐ Sand Penetrometer AS1289.6.3.3  
☐ Cone Penetrometer AS1289.6.3.2

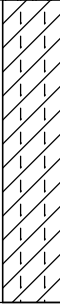
| SAMPLING & IN SITU TESTING LEGEND |                      |   |                         |       |                                       |
|-----------------------------------|----------------------|---|-------------------------|-------|---------------------------------------|
| A                                 | Auger sample         | G | Gas sample              | PID   | Photo ionisation detector (ppm)       |
| B                                 | Bulk sample          | P | Piston sample           | PL(A) | Point load axial test s(50) (MPa)     |
| BLK                               | Block sample         | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test s(50) (MPa) |
| C                                 | Core drilling        | W | Water sample            | pp    | Pocket penetrometer (kPa)             |
| D                                 | Disturbed sample     | > | Water seep              | S     | Standard penetration test             |
| E                                 | Environmental sample | ≡ | Water level             | V     | Shear vane (kPa)                      |

# TEST PIT LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 301999  
**NORTHING:** 6426982

**PIT No:** 105  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                                                                           | Graphic Log                                                                       | Sampling & In Situ Testing |       |        |                    | Water | Dynamic Penetrometer Test (blows per mm) |    |    |    |
|----|-----------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------|-------|--------|--------------------|-------|------------------------------------------|----|----|----|
|    |           |                                                                                                 |                                                                                   | Type                       | Depth | Sample | Results & Comments |       | 5                                        | 10 | 15 | 20 |
|    | 0.2       | FILLING - Generally comprising brown subrounded and subangular gravelly silty sand filling, dry |  | D                          | 0.1   | E      | PID<1              |       |                                          |    |    |    |
|    | 0.6       | CLAYEY SILT - Medium to low plasticity pale grey and brown w<PL                                 |  | D                          | 0.5   | E      | PID<1              |       |                                          |    |    |    |
|    | 1.2       | SILTY CLAY - Medium to high plasticity brown and red with rootlets, w>PL                        |  | D                          | 1.0   | E      | PID<1              |       |                                          |    |    |    |
|    | 1.2       | Pit discontinued at 1.2m, limit of investigation                                                |                                                                                   |                            |       |        |                    |       |                                          |    |    |    |
|    | 2.0       |                                                                                                 |                                                                                   |                            |       |        |                    |       |                                          |    |    |    |

**RIG:** 6.5 tonne excavator with 450mm bucket teeth

**LOGGED:** Sebastian

**SURVEY DATUM:** MGA94

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- ☐ Sand Penetrometer AS1289.6.3.3  
☐ Cone Penetrometer AS1289.6.3.2

| SAMPLING & IN SITU TESTING LEGEND |                      |   |                         |       |                                         |
|-----------------------------------|----------------------|---|-------------------------|-------|-----------------------------------------|
| A                                 | Auger sample         | G | Gas sample              | PID   | Photo ionisation detector (ppm)         |
| B                                 | Bulk sample          | P | Piston sample           | PL(A) | Point load axial test [s(50)] (MPa)     |
| BLK                               | Block sample         | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test [s(50)] (MPa) |
| C                                 | Core drilling        | W | Water sample            | pp    | Pocket penetrometer (kPa)               |
| D                                 | Disturbed sample     | > | Water seep              | sp    | Standard penetration test               |
| E                                 | Environmental sample | ≡ | Water level             | S     | Shear vane (kPa)                        |
|                                   |                      |   |                         | V     | Shear vane (kPa)                        |

# TEST PIT LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 301930  
**NORTHING:** 6426981

**PIT No:** 106  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                                                           | Graphic Log | Sampling & In Situ Testing |       |        |                    | Water | Dynamic Penetrometer Test (blows per mm) |    |    |    |
|----|-----------|---------------------------------------------------------------------------------|-------------|----------------------------|-------|--------|--------------------|-------|------------------------------------------|----|----|----|
|    |           |                                                                                 |             | Type                       | Depth | Sample | Results & Comments |       | 5                                        | 10 | 15 | 20 |
|    |           | FILLING - Generally comprising brown gravelly silty sand filling with clay, dry |             | D                          | 0.1   | E      | PID<1              |       |                                          |    |    |    |
|    |           | From 0.25m to 0.28m asphalt lens                                                |             | D                          | 0.26  | E      | PID<1              |       |                                          |    |    |    |
|    | 0.4       | From 0.35m to 0.37m asphalt lens                                                |             |                            |       |        |                    |       |                                          |    |    |    |
|    |           | CLAYEY SILT - Medium to low plasticity pale grey and brown w<PL                 |             | D                          | 0.5   | E      | PID<1              |       |                                          |    |    |    |
|    | 0.6       | SILTY CLAY - Medium plasticity, dark brown, w>PL                                |             |                            |       |        |                    |       |                                          |    |    |    |
|    | 1         |                                                                                 |             |                            |       |        |                    |       |                                          |    |    |    |
|    | 1.2       | Pit discontinued at 1.2m, limit of investigation                                |             | D                          | 1.2   | E      | PID<1              |       |                                          |    |    |    |
|    | 2         |                                                                                 |             |                            |       |        |                    |       |                                          |    |    |    |

**RIG:** 6.5 tonne excavator with 450mm bucket teeth

**LOGGED:** Sebastian

**SURVEY DATUM:** MGA94

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

☐ Sand Penetrometer AS1289.6.3.3  
☐ Cone Penetrometer AS1289.6.3.2

| SAMPLING & IN SITU TESTING LEGEND |                                        |                                               |  |
|-----------------------------------|----------------------------------------|-----------------------------------------------|--|
| A Auger sample                    | G Gas sample                           | PID Photo ionisation detector (ppm)           |  |
| B Bulk sample                     | P Piston sample                        | PL(A) Point load axial test [s(50)] (MPa)     |  |
| BLK Block sample                  | U <sub>1</sub> Tube sample (x mm dia.) | PL(D) Point load diametral test [s(50)] (MPa) |  |
| C Core drilling                   | W Water sample                         | pp Pocket penetrometer (kPa)                  |  |
| D Disturbed sample                | > Water seep                           | sp Standard penetration test                  |  |
| E Environmental sample            | ≡ Water level                          | V Shear vane (kPa)                            |  |

# TEST PIT LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 301964  
**NORTHING:** 6426981

**PIT No:** 107  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                                                       | Graphic Log | Sampling & In Situ Testing |       |        |                    | Water | Dynamic Penetrometer Test (blows per mm) |    |    |    |
|----|-----------|-----------------------------------------------------------------------------|-------------|----------------------------|-------|--------|--------------------|-------|------------------------------------------|----|----|----|
|    |           |                                                                             |             | Type                       | Depth | Sample | Results & Comments |       | 5                                        | 10 | 15 | 20 |
|    |           | FILLING - Generally comprising silty sand sub base filling, trace coal, dry |             | D                          | 0.1   | E      | PID<1              |       |                                          |    |    |    |
|    | 0.25      | From 0.2m dark grey ash lens                                                |             | D                          | 0.22  | E      | PID<1              |       |                                          |    |    |    |
|    |           | SILTY CLAY - Low plasticity, brown, w<PL                                    |             |                            |       |        |                    |       |                                          |    |    |    |
|    |           | From 0.5m brown mottled red, w>PL                                           |             | D                          | 0.6   | E      | PID<1              |       |                                          |    |    |    |
| 1  | 1.0       | Pit discontinued at 1.0m, limit of investigation                            |             |                            |       |        |                    |       |                                          |    |    |    |
| 2  |           |                                                                             |             |                            |       |        |                    |       |                                          |    |    |    |

**RIG:** 6.5 tonne excavator with 450mm bucket teeth

**LOGGED:** Sebastian

**SURVEY DATUM:** MGA94

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- ☐ Sand Penetrometer AS1289.6.3.3  
☐ Cone Penetrometer AS1289.6.3.2

| SAMPLING & IN SITU TESTING LEGEND |                      |       |                                        |
|-----------------------------------|----------------------|-------|----------------------------------------|
| A                                 | Auger sample         | G     | Gas sample                             |
| B                                 | Bulk sample          | P     | Piston sample                          |
| BLK                               | Block sample         | U     | Tube sample (x mm dia.)                |
| C                                 | Core drilling        | W     | Water sample                           |
| D                                 | Disturbed sample     | >     | Water seep                             |
| E                                 | Environmental sample | ≡     | Water level                            |
|                                   |                      | PID   | Photo ionisation detector (ppm)        |
|                                   |                      | PL(A) | Point load axial test (s(50) (MPa)     |
|                                   |                      | PL(D) | Point load diametral test (s(50) (MPa) |
|                                   |                      | pp    | Pocket penetrometer (kPa)              |
|                                   |                      | S     | Standard penetration test              |
|                                   |                      | V     | Shear vane (kPa)                       |

# TEST PIT LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 301909  
**NORTHING:** 6427013

**PIT No:** 108  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                                                                                     | Graphic Log                                                                       | Sampling & In Situ Testing |       |        |                    | Water | Dynamic Penetrometer Test (blows per mm) |    |    |    |
|----|-----------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------|-------|--------|--------------------|-------|------------------------------------------|----|----|----|
|    |           |                                                                                                           |                                                                                   | Type                       | Depth | Sample | Results & Comments |       | 5                                        | 10 | 15 | 20 |
|    |           | FILLING - Generally comprising brown fine to medium grained sand filling, trace fine gravel and silt, dry |  |                            |       |        |                    |       |                                          |    |    |    |
|    | 0.5       | SILTY CLAY - Medium plasticity brown bottled red, w>PL                                                    |                                                                                   |                            |       |        |                    |       |                                          |    |    |    |
|    |           |                                                                                                           |  | D                          | 0.3   | E      | PID<1              |       |                                          |    |    |    |
|    |           |                                                                                                           |                                                                                   | D                          | 0.8   | E      | PID<1              |       |                                          |    |    |    |
|    | 1.2       | Pit discontinued at 1.2m, limit of investigation                                                          |                                                                                   |                            |       |        |                    |       |                                          |    |    |    |

**RIG:** 6.5 tonne excavator with 450mm bucket teeth

**LOGGED:** Sebastian

**SURVEY DATUM:** MGA94

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- ☐ Sand Penetrometer AS1289.6.3.3  
☐ Cone Penetrometer AS1289.6.3.2

| SAMPLING & IN SITU TESTING LEGEND |                      |   |                         |       |                                         |
|-----------------------------------|----------------------|---|-------------------------|-------|-----------------------------------------|
| A                                 | Auger sample         | G | Gas sample              | PID   | Photo ionisation detector (ppm)         |
| B                                 | Bulk sample          | P | Piston sample           | PL(A) | Point load axial test $s(50)$ (MPa)     |
| BLK                               | Block sample         | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test $s(50)$ (MPa) |
| C                                 | Core drilling        | W | Water sample            | pp    | Pocket penetrometer (kPa)               |
| D                                 | Disturbed sample     | > | Water seep              | S     | Standard penetration test               |
| E                                 | Environmental sample | ≡ | Water level             | V     | Shear vane (kPa)                        |

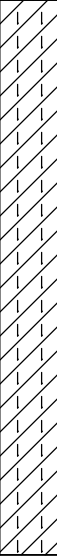


# TEST PIT LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 301926  
**NORTHING:** 6427025

**PIT No:** 109  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                                                               | Graphic Log                                                                        | Sampling & In Situ Testing |       |        |                    | Water | Dynamic Penetrometer Test (blows per mm) |    |    |    |
|----|-----------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------|-------|--------|--------------------|-------|------------------------------------------|----|----|----|
|    |           |                                                                                     |                                                                                    | Type                       | Depth | Sample | Results & Comments |       | 5                                        | 10 | 15 | 20 |
|    | 0.4       | FILLING - Generally comprising brown sandy silt filling with subrounded gravel, dry |   | D                          | 0.3   | E      | PID<1              |       |                                          |    |    |    |
|    |           | SILTY CLAY - Medium plasticity, brown, w>PL                                         |  | D                          | 1.0   | E      | PID<1              |       |                                          |    |    |    |
|    | 1.5       | Pit discontinued at 1.5m, limit of investigation                                    |                                                                                    | D                          | 1.4   | E      | PID<1              |       |                                          |    |    |    |
|    | 2         |                                                                                     |                                                                                    |                            |       |        |                    |       |                                          |    |    |    |

**RIG:** 6.5 tonne excavator with 450mm bucket teeth

**LOGGED:** Sebastian

**SURVEY DATUM:** MGA94

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- ☐ Sand Penetrometer AS1289.6.3.3  
☐ Cone Penetrometer AS1289.6.3.2

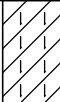
| SAMPLING & IN SITU TESTING LEGEND |                      |   |                         |       |                                        |
|-----------------------------------|----------------------|---|-------------------------|-------|----------------------------------------|
| A                                 | Auger sample         | G | Gas sample              | PID   | Photo ionisation detector (ppm)        |
| B                                 | Bulk sample          | P | Piston sample           | PL(A) | Point load axial test (s(50) (MPa)     |
| BLK                               | Block sample         | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test (s(50) (MPa) |
| C                                 | Core drilling        | W | Water sample            | pp    | Pocket penetrometer (kPa)              |
| D                                 | Disturbed sample     | > | Water seep              | S     | Standard penetration test              |
| E                                 | Environmental sample | ≡ | Water level             | V     | Shear vane (kPa)                       |

# TEST PIT LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 301901  
**NORTHING:** 6426995

**PIT No:** 110  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                                          | Graphic Log                                                                       | Sampling & In Situ Testing |       |        |                    | Water | Dynamic Penetrometer Test (blows per mm) |    |    |    |
|----|-----------|----------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------|-------|--------|--------------------|-------|------------------------------------------|----|----|----|
|    |           |                                                                |                                                                                   | Type                       | Depth | Sample | Results & Comments |       | 5                                        | 10 | 15 | 20 |
|    | 0.2       | FILLING - Brown sandy silt filling with subrounded gravel, dry |  | D                          | 0.1   | E      | PID<1              |       |                                          |    |    |    |
|    |           | SILTY CLAY - Low plasticity, pale brown, w<PL                  |                                                                                   |                            |       |        |                    |       |                                          |    |    |    |
|    |           |                                                                |  | D                          | 0.4   | E      | PID<1              |       |                                          |    |    |    |
|    |           | From 0.6m dark brown silty clay, w>PL                          |                                                                                   |                            |       |        |                    |       |                                          |    |    |    |
| 1  | 1.0       | Pit discontinued at 1.0m, limit of investigation               |                                                                                   |                            |       |        |                    |       |                                          |    |    |    |
| 2  |           |                                                                |                                                                                   |                            |       |        |                    |       |                                          |    |    |    |

**RIG:** 6.5 tonne excavator with 450mm bucket teeth

**LOGGED:** Sebastian

**SURVEY DATUM:** MGA94

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- ☐ Sand Penetrometer AS1289.6.3.3  
☐ Cone Penetrometer AS1289.6.3.2

| SAMPLING & IN SITU TESTING LEGEND |                      |   |                         |       |                                         |
|-----------------------------------|----------------------|---|-------------------------|-------|-----------------------------------------|
| A                                 | Auger sample         | G | Gas sample              | PID   | Photo ionisation detector (ppm)         |
| B                                 | Bulk sample          | P | Piston sample           | PL(A) | Point load axial test $s(50)$ (MPa)     |
| BLK                               | Block sample         | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test $s(50)$ (MPa) |
| C                                 | Core drilling        | W | Water sample            | pp    | Pocket penetrometer (kPa)               |
| D                                 | Disturbed sample     | > | Water seep              | sp    | Standard penetration test               |
| E                                 | Environmental sample | ≡ | Water level             | S     | Shear vane (kPa)                        |
|                                   |                      |   |                         | V     | Shear vane (kPa)                        |

# TEST PIT LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 301996  
**NORTHING:** 6426991

**PIT No:** 111  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                                                                                                                  | Graphic Log | Sampling & In Situ Testing |       |        |                    | Water | Dynamic Penetrometer Test (blows per mm) |    |    |    |
|----|-----------|----------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------|-------|--------|--------------------|-------|------------------------------------------|----|----|----|
|    |           |                                                                                                                                        |             | Type                       | Depth | Sample | Results & Comments |       | 5                                        | 10 | 15 | 20 |
|    |           | FILLING - Generally comprising sandy silty topsoil with, some general refuse and ACM fragments on surface, ash lens from 0.2m to 0.21m |             | D                          | 0.0   | E      | PID<1              |       |                                          |    |    |    |
|    | 0.2       | CLAYEY SILT - Low plasticity, pale brown and grey, w<PL                                                                                |             |                            | 0.1   |        |                    |       |                                          |    |    |    |
|    | 0.4       | Pit discontinued at 0.4m, limit of investigation                                                                                       |             |                            |       |        |                    |       |                                          |    |    |    |
| 1  |           |                                                                                                                                        |             |                            |       |        |                    |       |                                          |    |    |    |
| 2  |           |                                                                                                                                        |             |                            |       |        |                    |       |                                          |    |    |    |

**RIG:** 6.5 tonne excavator with 450mm bucket teeth

**LOGGED:** Sebastian

**SURVEY DATUM:** MGA94

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- ☐ Sand Penetrometer AS1289.6.3.3  
☐ Cone Penetrometer AS1289.6.3.2

| SAMPLING & IN SITU TESTING LEGEND |                      |       |                                        |
|-----------------------------------|----------------------|-------|----------------------------------------|
| A                                 | Auger sample         | G     | Gas sample                             |
| B                                 | Bulk sample          | P     | Piston sample                          |
| BLK                               | Block sample         | U     | Tube sample (x mm dia.)                |
| C                                 | Core drilling        | W     | Water sample                           |
| D                                 | Disturbed sample     | W     | Water seep                             |
| E                                 | Environmental sample | W     | Water level                            |
|                                   |                      | PID   | Photo ionisation detector (ppm)        |
|                                   |                      | PL(A) | Point load axial test (s(50) (MPa)     |
|                                   |                      | PL(D) | Point load diametral test (s(50) (MPa) |
|                                   |                      | pp    | Pocket penetrometer (kPa)              |
|                                   |                      | S     | Standard penetration test              |
|                                   |                      | V     | Shear vane (kPa)                       |

# TEST PIT LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 301837  
**NORTHING:** 6427065

**PIT No:** 112  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                                                                                            | Graphic Log | Sampling & In Situ Testing |       |        |                    | Water | Dynamic Penetrometer Test (blows per mm) |    |    |    |
|----|-----------|------------------------------------------------------------------------------------------------------------------|-------------|----------------------------|-------|--------|--------------------|-------|------------------------------------------|----|----|----|
|    |           |                                                                                                                  |             | Type                       | Depth | Sample | Results & Comments |       | 5                                        | 10 | 15 | 20 |
|    | 0.1       | FILLING - Generally comprising sandy silty topsoil filling, with subrounded to subangular gravel, rootlets, W<PL |             | D                          | 0.05  | E      | PID<1              |       |                                          |    |    |    |
|    |           | FILLING - Generally comprising brown silty fine grained gravel, dry                                              |             | D                          | 0.3   | E      | PID<1              |       |                                          |    |    |    |
|    | 0.5       | SILTY CLAY - Medium plasticity, brown, w>PL                                                                      |             |                            |       |        |                    |       |                                          |    |    |    |
|    | 0.8       | Pit discontinued at 0.8m, limit of investigation                                                                 |             | D                          | 0.7   | E      | PID<1              |       |                                          |    |    |    |
| 1  |           |                                                                                                                  |             |                            |       |        |                    |       |                                          |    |    |    |
| 2  |           |                                                                                                                  |             |                            |       |        |                    |       |                                          |    |    |    |

**RIG:** 6.5 tonne excavator with 450mm bucket teeth

**LOGGED:** Sebastian

**SURVEY DATUM:** MGA94

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- ☐ Sand Penetrometer AS1289.6.3.3  
☐ Cone Penetrometer AS1289.6.3.2

| SAMPLING & IN SITU TESTING LEGEND |                      |   |                         |       |                                         |
|-----------------------------------|----------------------|---|-------------------------|-------|-----------------------------------------|
| A                                 | Auger sample         | G | Gas sample              | PID   | Photo ionisation detector (ppm)         |
| B                                 | Bulk sample          | P | Piston sample           | PL(A) | Point load axial test $s(50)$ (MPa)     |
| BLK                               | Block sample         | U | Tube sample (x mm dia.) | PL(D) | Point load diametral test $s(50)$ (MPa) |
| C                                 | Core drilling        | W | Water sample            | pp    | Pocket penetrometer (kPa)               |
| D                                 | Disturbed sample     | > | Water seep              | sp    | Standard penetration test               |
| E                                 | Environmental sample | ≡ | Water level             | S     | Shear vane (kPa)                        |
|                                   |                      | V |                         | V     | Shear vane (kPa)                        |

# TEST PIT LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 301888  
**NORTHING:** 6427052

**PIT No:** 113  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                            | Graphic Log | Sampling & In Situ Testing |       |        |                    | Water | Dynamic Penetrometer Test (blows per mm) |    |    |    |
|----|-----------|--------------------------------------------------|-------------|----------------------------|-------|--------|--------------------|-------|------------------------------------------|----|----|----|
|    |           |                                                  |             | Type                       | Depth | Sample | Results & Comments |       | 5                                        | 10 | 15 | 20 |
|    | 0.1       | SILTY TOPSOIL - Brown with rootlets, w<PL        |             | D                          | 0.05  | E      | PID<1              |       |                                          |    |    |    |
|    |           | SILTY CLAY - Medium plasticity, brown, w>PL      |             |                            |       |        |                    |       |                                          |    |    |    |
|    | 0.5       | Pit discontinued at 0.5m, limit of investigation |             | D                          | 0.4   | E      | PID<1              |       |                                          |    |    |    |
|    | 1         |                                                  |             |                            |       |        |                    |       |                                          |    |    |    |
|    | 2         |                                                  |             |                            |       |        |                    |       |                                          |    |    |    |

**RIG:** 6.5 tonne excavator with 450mm bucket teeth

**LOGGED:** Sebastian

**SURVEY DATUM:** MGA94

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

☐ Sand Penetrometer AS1289.6.3.3  
☐ Cone Penetrometer AS1289.6.3.2

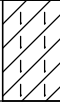
| SAMPLING & IN SITU TESTING LEGEND |                           |                                               |  |
|-----------------------------------|---------------------------|-----------------------------------------------|--|
| A Auger sample                    | G Gas sample              | PID Photo ionisation detector (ppm)           |  |
| B Bulk sample                     | P Piston sample           | PL(A) Point load axial test $s(50)$ (MPa)     |  |
| BLK Block sample                  | U Tube sample (x mm dia.) | PL(D) Point load diametral test $s(50)$ (MPa) |  |
| C Core drilling                   | W Water sample            | pp Pocket penetrometer (kPa)                  |  |
| D Disturbed sample                | > Water seep              | S Standard penetration test                   |  |
| E Environmental sample            | ≡ Water level             | V Shear vane (kPa)                            |  |

# TEST PIT LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 301827  
**NORTHING:** 6427073

**PIT No:** 114  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                                   | Graphic Log                                                                       | Sampling & In Situ Testing |       |        |                    | Water | Dynamic Penetrometer Test (blows per mm) |    |    |    |
|----|-----------|---------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------|-------|--------|--------------------|-------|------------------------------------------|----|----|----|
|    |           |                                                         |                                                                                   | Type                       | Depth | Sample | Results & Comments |       | 5                                        | 10 | 15 | 20 |
|    | 0.1       | SANDY SILTY TOPSOIL - Brown with rootlets, W<PL         |  | D                          | 0.05  | E      | PID<1              |       |                                          |    |    |    |
|    |           | CLAYEY SILT - Low plasticity, pale brown, w<PL          |  |                            |       |        |                    |       |                                          |    |    |    |
|    | 0.4       |                                                         |                                                                                   | D                          | 0.3   | E      | PID<1              |       |                                          |    |    |    |
|    |           | SILTY CLAY - Medium plasticity, brown mottled red, w>PL |  |                            |       |        |                    |       |                                          |    |    |    |
|    | 0.6       | Pit discontinued at 0.6m, limit of investigation        |                                                                                   |                            |       |        |                    |       |                                          |    |    |    |
| 1  |           |                                                         |                                                                                   |                            |       |        |                    |       |                                          |    |    |    |
| 2  |           |                                                         |                                                                                   |                            |       |        |                    |       |                                          |    |    |    |

**RIG:** 6.5 tonne excavator with 450mm bucket teeth

**LOGGED:** Sebastian

**SURVEY DATUM:** MGA94

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- ☐ Sand Penetrometer AS1289.6.3.3  
☐ Cone Penetrometer AS1289.6.3.2

| SAMPLING & IN SITU TESTING LEGEND |                           |                                               |  |
|-----------------------------------|---------------------------|-----------------------------------------------|--|
| A Auger sample                    | G Gas sample              | PID Photo ionisation detector (ppm)           |  |
| B Bulk sample                     | P Piston sample           | PL(A) Point load axial test $s(50)$ (MPa)     |  |
| BLK Block sample                  | U Tube sample (x mm dia.) | PL(D) Point load diametral test $s(50)$ (MPa) |  |
| C Core drilling                   | W Water sample            | pp Pocket penetrometer (kPa)                  |  |
| D Disturbed sample                | > Water seep              | S Standard penetration test                   |  |
| E Environmental sample            | ≡ Water level             | V Shear vane (kPa)                            |  |

# TEST PIT LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 301782  
**NORTHING:** 6427121

**PIT No:** 115  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                                   | Graphic Log | Sampling & In Situ Testing |       |        |                    | Water | Dynamic Penetrometer Test (blows per mm) |    |    |    |
|----|-----------|---------------------------------------------------------|-------------|----------------------------|-------|--------|--------------------|-------|------------------------------------------|----|----|----|
|    |           |                                                         |             | Type                       | Depth | Sample | Results & Comments |       | 5                                        | 10 | 15 | 20 |
|    | 0.1       | SANDY SILTY TOPSOIL - Brown with rootlets, w<PL         |             | D                          | 0.05  | E      | PID<1              |       |                                          |    |    |    |
|    |           | CLAYEY SILT - Low plasticity, pale brown, w<PL          |             |                            |       |        |                    |       |                                          |    |    |    |
|    | 0.3       |                                                         |             | D                          | 0.3   | E      | PID<1              |       |                                          |    |    |    |
|    | 0.4       | SILTY CLAY - Medium plasticity, brown mottled red, w>PL |             |                            |       |        |                    |       |                                          |    |    |    |
|    | 0.5       | Pit discontinued at 0.5m, limit of investigation        |             |                            |       |        |                    |       |                                          |    |    |    |
| 1  |           |                                                         |             |                            |       |        |                    |       |                                          |    |    |    |
| 2  |           |                                                         |             |                            |       |        |                    |       |                                          |    |    |    |

**RIG:** 6.5 tonne excavator with 450mm bucket teeth

**LOGGED:** Sebastian

**SURVEY DATUM:** MGA94

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- ☐ Sand Penetrometer AS1289.6.3.3  
☐ Cone Penetrometer AS1289.6.3.2

| SAMPLING & IN SITU TESTING LEGEND |                      |       |                                         |
|-----------------------------------|----------------------|-------|-----------------------------------------|
| A                                 | Auger sample         | G     | Gas sample                              |
| B                                 | Bulk sample          | P     | Piston sample                           |
| BLK                               | Block sample         | U     | Tube sample (x mm dia.)                 |
| C                                 | Core drilling        | W     | Water sample                            |
| D                                 | Disturbed sample     | W     | Water seep                              |
| E                                 | Environmental sample | W     | Water level                             |
|                                   |                      | PID   | Photo ionisation detector (ppm)         |
|                                   |                      | PL(A) | Point load axial test (s(50)) (MPa)     |
|                                   |                      | PL(D) | Point load diametral test (s(50)) (MPa) |
|                                   |                      | pp    | Pocket penetrometer (kPa)               |
|                                   |                      | S     | Standard penetration test               |
|                                   |                      | V     | Shear vane (kPa)                        |



# TEST PIT LOG

**CLIENT:** Pacific Brook Christian School Ltd  
**PROJECT:** Detailed Site Investigation  
**LOCATION:** Lot 100 DP 1261496, Maitland Street,  
 Muswellbrook NSW

**SURFACE LEVEL:** --  
**EASTING:** 301777  
**NORTHING:** 6427160

**PIT No:** 116  
**PROJECT No:** 91601.00  
**DATE:** 1/7/2019  
**SHEET 1 OF 1**

| RL | Depth (m) | Description of Strata                                              | Graphic Log | Sampling & In Situ Testing |       |        |                    | Water | Dynamic Penetrometer Test (blows per mm) |    |    |    |
|----|-----------|--------------------------------------------------------------------|-------------|----------------------------|-------|--------|--------------------|-------|------------------------------------------|----|----|----|
|    |           |                                                                    |             | Type                       | Depth | Sample | Results & Comments |       | 5                                        | 10 | 15 | 20 |
|    | 0.1       | FILLING - Generally comprising silty sandy clay, trace metal, w<PL |             | D                          | 0.05  | E      | PID<1              |       |                                          |    |    |    |
|    |           | SILTY CLAY - Medium plasticity, brown and red, w<PL                |             |                            |       |        |                    |       |                                          |    |    |    |
|    | 0.4       |                                                                    |             | D                          | 0.3   | E      | PID<1              |       |                                          |    |    |    |
|    | 0.4       | Pit discontinued at 0.4m, limit of investigation                   |             |                            |       |        |                    |       |                                          |    |    |    |
|    | 1         |                                                                    |             |                            |       |        |                    |       |                                          |    |    |    |
|    | 2         |                                                                    |             |                            |       |        |                    |       |                                          |    |    |    |

**RIG:** 6.5 tonne excavator with 450mm bucket teeth

**LOGGED:** Sebastian

**SURVEY DATUM:** MGA94

**WATER OBSERVATIONS:** No free groundwater observed

**REMARKS:**

- ☐ Sand Penetrometer AS1289.6.3.3  
☐ Cone Penetrometer AS1289.6.3.2

| SAMPLING & IN SITU TESTING LEGEND |                           |                                               |  |
|-----------------------------------|---------------------------|-----------------------------------------------|--|
| A Auger sample                    | G Gas sample              | PID Photo ionisation detector (ppm)           |  |
| B Bulk sample                     | P Piston sample           | PL(A) Point load axial test $s(50)$ (MPa)     |  |
| BLK Block sample                  | U Tube sample (x mm dia.) | PL(D) Point load diametral test $s(50)$ (MPa) |  |
| C Core drilling                   | W Water sample            | pp Pocket penetrometer (kPa)                  |  |
| D Disturbed sample                | > Water seep              | S Standard penetration test                   |  |
| E Environmental sample            | ≡ Water level             | V Shear vane (kPa)                            |  |

---

## **Appendix B**

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Laboratory Report Sheets

## **CERTIFICATE OF ANALYSIS 220893**

### **Client Details**

|                  |                                                         |
|------------------|---------------------------------------------------------|
| <b>Client</b>    | Douglas Partners Newcastle                              |
| <b>Attention</b> | Chris Bozinovski, Paulo Sebastian                       |
| <b>Address</b>   | Box 324 Hunter Region Mail Centre, Newcastle, NSW, 2310 |

### **Sample Details**

|                                             |                     |
|---------------------------------------------|---------------------|
| <b>Your Reference</b>                       | <b>91601</b>        |
| <b>Number of Samples</b>                    | 18 Soil, 1 Material |
| <b>Date samples received</b>                | 03/07/2019          |
| <b>Date completed instructions received</b> | 03/07/2019          |

### **Analysis Details**

Please refer to the following pages for results, methodology summary and quality control data.  
 Samples were analysed as received from the client. Results relate specifically to the samples as received.  
 Results are reported on a dry weight basis for solids and on an as received basis for other matrices.  
**Please refer to the last page of this report for any comments relating to the results.**

### **Report Details**

|                                                                                                             |            |
|-------------------------------------------------------------------------------------------------------------|------------|
| <b>Date results requested by</b>                                                                            | 10/07/2019 |
| <b>Date of Issue</b>                                                                                        | 10/07/2019 |
| NATA Accreditation Number 2901. This document shall not be reproduced except in full.                       |            |
| Accredited for compliance with ISO/IEC 17025 - Testing. <b>Tests not covered by NATA are denoted with *</b> |            |

#### **Asbestos Approved By**

Analysed by Asbestos Approved Identifier: Aida Marner  
 Authorised by Asbestos Approved Signatory: Lucy Zhu

#### **Results Approved By**

Giovanni Agosti, Group Technical Manager  
 Jaimie Loa-Kum-Cheung, Metals Supervisor  
 Lucy Zhu, Senior Asbestos Analyst  
 Steven Luong, Organics Supervisor

#### **Authorised By**



Nancy Zhang, Laboratory Manager

## vTRH(C6-C10)/BTEXN in Soil

|                                                      |       |            |            |            |            |            |
|------------------------------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference                                        |       | 220893-1   | 220893-2   | 220893-3   | 220893-4   | 220893-5   |
| Your Reference                                       | UNITS | 101        | 102        | 103        | 104        | 105        |
| Depth                                                |       | 0.2        | 0.05       | 0.05       | 1.0        | 0.1        |
| Date Sampled                                         |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample                                       |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                                       | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed                                        | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| TRH C <sub>6</sub> - C <sub>9</sub>                  | mg/kg | <25        | <25        | <25        | <25        | <25        |
| TRH C <sub>6</sub> - C <sub>10</sub>                 | mg/kg | <25        | <25        | <25        | <25        | <25        |
| vTPH C <sub>6</sub> - C <sub>10</sub> less BTEX (F1) | mg/kg | <25        | <25        | <25        | <25        | <25        |
| Benzene                                              | mg/kg | <0.2       | <0.2       | <0.2       | <0.2       | <0.2       |
| Toluene                                              | mg/kg | <0.5       | <0.5       | <0.5       | <0.5       | <0.5       |
| Ethylbenzene                                         | mg/kg | <1         | <1         | <1         | <1         | <1         |
| m+p-xylene                                           | mg/kg | <2         | <2         | <2         | <2         | <2         |
| o-Xylene                                             | mg/kg | <1         | <1         | <1         | <1         | <1         |
| naphthalene                                          | mg/kg | <1         | <1         | <1         | <1         | <1         |
| Total +ve Xylenes                                    | mg/kg | <3         | <3         | <3         | <3         | <3         |
| Surrogate aaa-Trifluorotoluene                       | %     | 72         | 90         | 87         | 81         | 92         |

## vTRH(C6-C10)/BTEXN in Soil

|                                                      |       |            |            |            |            |            |
|------------------------------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference                                        |       | 220893-6   | 220893-7   | 220893-8   | 220893-9   | 220893-10  |
| Your Reference                                       | UNITS | 106        | 106        | 107        | 107        | 108        |
| Depth                                                |       | 0.26       | 0.5        | 0.1        | 0.22       | 0.3        |
| Date Sampled                                         |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample                                       |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                                       | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed                                        | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| TRH C <sub>6</sub> - C <sub>9</sub>                  | mg/kg | <25        | <25        | <25        | <25        | <25        |
| TRH C <sub>6</sub> - C <sub>10</sub>                 | mg/kg | <25        | <25        | <25        | <25        | <25        |
| vTPH C <sub>6</sub> - C <sub>10</sub> less BTEX (F1) | mg/kg | <25        | <25        | <25        | <25        | <25        |
| Benzene                                              | mg/kg | <0.2       | <0.2       | <0.2       | <0.2       | <0.2       |
| Toluene                                              | mg/kg | <0.5       | <0.5       | <0.5       | <0.5       | <0.5       |
| Ethylbenzene                                         | mg/kg | <1         | <1         | <1         | <1         | <1         |
| m+p-xylene                                           | mg/kg | <2         | <2         | <2         | <2         | <2         |
| o-Xylene                                             | mg/kg | <1         | <1         | <1         | <1         | <1         |
| naphthalene                                          | mg/kg | <1         | <1         | <1         | <1         | <1         |
| Total +ve Xylenes                                    | mg/kg | <3         | <3         | <3         | <3         | <3         |
| Surrogate aaa-Trifluorotoluene                       | %     | 88         | 69         | 88         | 88         | 72         |

## vTRH(C6-C10)/BTEXN in Soil

|                                                      |       |            |            |            |            |            |
|------------------------------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference                                        |       | 220893-11  | 220893-12  | 220893-13  | 220893-15  | 220893-16  |
| Your Reference                                       | UNITS | 109        | 110        | 111        | 113        | 114        |
| Depth                                                |       | 1.0        | 0.1        | 0-0.1      | 0.05       | 0.05       |
| Date Sampled                                         |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample                                       |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                                       | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed                                        | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| TRH C <sub>6</sub> - C <sub>9</sub>                  | mg/kg | <25        | <25        | <25        | <25        | <25        |
| TRH C <sub>6</sub> - C <sub>10</sub>                 | mg/kg | <25        | <25        | <25        | <25        | <25        |
| vTPH C <sub>6</sub> - C <sub>10</sub> less BTEX (F1) | mg/kg | <25        | <25        | <25        | <25        | <25        |
| Benzene                                              | mg/kg | <0.2       | <0.2       | <0.2       | <0.2       | <0.2       |
| Toluene                                              | mg/kg | <0.5       | <0.5       | <0.5       | <0.5       | <0.5       |
| Ethylbenzene                                         | mg/kg | <1         | <1         | <1         | <1         | <1         |
| m+p-xylene                                           | mg/kg | <2         | <2         | <2         | <2         | <2         |
| o-Xylene                                             | mg/kg | <1         | <1         | <1         | <1         | <1         |
| naphthalene                                          | mg/kg | <1         | <1         | <1         | <1         | <1         |
| Total +ve Xylenes                                    | mg/kg | <3         | <3         | <3         | <3         | <3         |
| Surrogate aaa-Trifluorotoluene                       | %     | 84         | 90         | 76         | 88         | 86         |

## vTRH(C6-C10)/BTEXN in Soil

|                                                      |       |            |            |            |
|------------------------------------------------------|-------|------------|------------|------------|
| Our Reference                                        |       | 220893-17  | 220893-18  | 220893-19  |
| Your Reference                                       | UNITS | 115        | 116        | D1         |
| Depth                                                |       | 0.3        | 0.05       | -          |
| Date Sampled                                         |       | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample                                       |       | Soil       | Soil       | Soil       |
| Date extracted                                       | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed                                        | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| TRH C <sub>6</sub> - C <sub>9</sub>                  | mg/kg | <25        | <25        | <25        |
| TRH C <sub>6</sub> - C <sub>10</sub>                 | mg/kg | <25        | <25        | <25        |
| vTPH C <sub>6</sub> - C <sub>10</sub> less BTEX (F1) | mg/kg | <25        | <25        | <25        |
| Benzene                                              | mg/kg | <0.2       | <0.2       | <0.2       |
| Toluene                                              | mg/kg | <0.5       | <0.5       | <0.5       |
| Ethylbenzene                                         | mg/kg | <1         | <1         | <1         |
| m+p-xylene                                           | mg/kg | <2         | <2         | <2         |
| o-Xylene                                             | mg/kg | <1         | <1         | <1         |
| naphthalene                                          | mg/kg | <1         | <1         | <1         |
| Total +ve Xylenes                                    | mg/kg | <3         | <3         | <3         |
| Surrogate aaa-Trifluorotoluene                       | %     | 74         | 82         | 90         |

| svTRH (C10-C40) in Soil                                      |       |            |            |            |            |            |
|--------------------------------------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference                                                |       | 220893-1   | 220893-2   | 220893-3   | 220893-4   | 220893-5   |
| Your Reference                                               | UNITS | 101        | 102        | 103        | 104        | 105        |
| Depth                                                        |       | 0.2        | 0.05       | 0.05       | 1.0        | 0.1        |
| Date Sampled                                                 |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample                                               |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                                               | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed                                                | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| TRH C <sub>10</sub> - C <sub>14</sub>                        | mg/kg | <50        | <50        | <50        | <50        | <50        |
| TRH C <sub>15</sub> - C <sub>28</sub>                        | mg/kg | <100       | <100       | <100       | <100       | <100       |
| TRH C <sub>29</sub> - C <sub>36</sub>                        | mg/kg | <100       | <100       | <100       | <100       | <100       |
| TRH >C <sub>10</sub> -C <sub>16</sub>                        | mg/kg | <50        | <50        | <50        | <50        | <50        |
| TRH >C <sub>10</sub> - C <sub>16</sub> less Naphthalene (F2) | mg/kg | <50        | <50        | <50        | <50        | <50        |
| TRH >C <sub>16</sub> -C <sub>34</sub>                        | mg/kg | <100       | <100       | <100       | <100       | <100       |
| TRH >C <sub>34</sub> -C <sub>40</sub>                        | mg/kg | <100       | <100       | <100       | <100       | <100       |
| Total +ve TRH (>C10-C40)                                     | mg/kg | <50        | <50        | <50        | <50        | <50        |
| Surrogate o-Terphenyl                                        | %     | 105        | 89         | 90         | 86         | 92         |

| svTRH (C10-C40) in Soil                                      |       |            |            |            |            |            |
|--------------------------------------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference                                                |       | 220893-6   | 220893-7   | 220893-8   | 220893-9   | 220893-10  |
| Your Reference                                               | UNITS | 106        | 106        | 107        | 107        | 108        |
| Depth                                                        |       | 0.26       | 0.5        | 0.1        | 0.22       | 0.3        |
| Date Sampled                                                 |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample                                               |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                                               | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed                                                | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| TRH C <sub>10</sub> - C <sub>14</sub>                        | mg/kg | <50        | <50        | <50        | <50        | <50        |
| TRH C <sub>15</sub> - C <sub>28</sub>                        | mg/kg | 1,300      | <100       | <100       | <100       | <100       |
| TRH C <sub>29</sub> - C <sub>36</sub>                        | mg/kg | 1,200      | <100       | <100       | <100       | <100       |
| TRH >C <sub>10</sub> -C <sub>16</sub>                        | mg/kg | 62         | <50        | <50        | <50        | <50        |
| TRH >C <sub>10</sub> - C <sub>16</sub> less Naphthalene (F2) | mg/kg | 62         | <50        | <50        | <50        | <50        |
| TRH >C <sub>16</sub> -C <sub>34</sub>                        | mg/kg | 2,300      | <100       | <100       | <100       | <100       |
| TRH >C <sub>34</sub> -C <sub>40</sub>                        | mg/kg | 600        | <100       | <100       | <100       | <100       |
| Total +ve TRH (>C10-C40)                                     | mg/kg | 2,900      | <50        | <50        | <50        | <50        |
| Surrogate o-Terphenyl                                        | %     | #          | 88         | 90         | 86         | 85         |

## svTRH (C10-C40) in Soil

|                                                              |       |            |            |            |            |            |
|--------------------------------------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference                                                |       | 220893-11  | 220893-12  | 220893-13  | 220893-15  | 220893-16  |
| Your Reference                                               | UNITS | 109        | 110        | 111        | 113        | 114        |
| Depth                                                        |       | 1.0        | 0.1        | 0-0.1      | 0.05       | 0.05       |
| Date Sampled                                                 |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample                                               |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                                               | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed                                                | -     | 04/07/2019 | 04/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| TRH C <sub>10</sub> - C <sub>14</sub>                        | mg/kg | <50        | <50        | <50        | <50        | <50        |
| TRH C <sub>15</sub> - C <sub>28</sub>                        | mg/kg | <100       | <100       | <100       | <100       | <100       |
| TRH C <sub>29</sub> - C <sub>36</sub>                        | mg/kg | <100       | <100       | <100       | <100       | <100       |
| TRH >C <sub>10</sub> -C <sub>16</sub>                        | mg/kg | <50        | <50        | <50        | <50        | <50        |
| TRH >C <sub>10</sub> - C <sub>16</sub> less Naphthalene (F2) | mg/kg | <50        | <50        | <50        | <50        | <50        |
| TRH >C <sub>16</sub> -C <sub>34</sub>                        | mg/kg | <100       | <100       | <100       | <100       | <100       |
| TRH >C <sub>34</sub> -C <sub>40</sub>                        | mg/kg | <100       | <100       | <100       | <100       | <100       |
| Total +ve TRH (>C10-C40)                                     | mg/kg | <50        | <50        | <50        | <50        | <50        |
| Surrogate o-Terphenyl                                        | %     | 88         | 88         | 88         | 90         | 89         |

## svTRH (C10-C40) in Soil

|                                                              |       |            |            |            |
|--------------------------------------------------------------|-------|------------|------------|------------|
| Our Reference                                                |       | 220893-17  | 220893-18  | 220893-19  |
| Your Reference                                               | UNITS | 115        | 116        | D1         |
| Depth                                                        |       | 0.3        | 0.05       | -          |
| Date Sampled                                                 |       | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample                                               |       | Soil       | Soil       | Soil       |
| Date extracted                                               | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed                                                | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| TRH C <sub>10</sub> - C <sub>14</sub>                        | mg/kg | <50        | <50        | <50        |
| TRH C <sub>15</sub> - C <sub>28</sub>                        | mg/kg | <100       | <100       | <100       |
| TRH C <sub>29</sub> - C <sub>36</sub>                        | mg/kg | <100       | <100       | <100       |
| TRH >C <sub>10</sub> -C <sub>16</sub>                        | mg/kg | <50        | <50        | <50        |
| TRH >C <sub>10</sub> - C <sub>16</sub> less Naphthalene (F2) | mg/kg | <50        | <50        | <50        |
| TRH >C <sub>16</sub> -C <sub>34</sub>                        | mg/kg | <100       | <100       | <100       |
| TRH >C <sub>34</sub> -C <sub>40</sub>                        | mg/kg | <100       | <100       | <100       |
| Total +ve TRH (>C10-C40)                                     | mg/kg | <50        | <50        | <50        |
| Surrogate o-Terphenyl                                        | %     | 90         | 91         | 90         |



| PAHs in Soil                      |       |            |            |            |            |            |
|-----------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference                     |       | 220893-1   | 220893-2   | 220893-3   | 220893-4   | 220893-5   |
| Your Reference                    | UNITS | 101        | 102        | 103        | 104        | 105        |
| Depth                             |       | 0.2        | 0.05       | 0.05       | 1.0        | 0.1        |
| Date Sampled                      |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample                    |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                    | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed                     | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Naphthalene                       | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Acenaphthylene                    | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Acenaphthene                      | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Fluorene                          | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Phenanthrene                      | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Anthracene                        | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Fluoranthene                      | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Pyrene                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Benzo(a)anthracene                | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Chrysene                          | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Benzo(b,j+k)fluoranthene          | mg/kg | <0.2       | <0.2       | <0.2       | <0.2       | <0.2       |
| Benzo(a)pyrene                    | mg/kg | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      |
| Indeno(1,2,3-c,d)pyrene           | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Dibenzo(a,h)anthracene            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Benzo(g,h,i)perylene              | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Total +ve PAH's                   | mg/kg | <0.05      | <0.05      | <0.05      | <0.05      | <0.05      |
| Benzo(a)pyrene TEQ calc (zero)    | mg/kg | <0.5       | <0.5       | <0.5       | <0.5       | <0.5       |
| Benzo(a)pyrene TEQ calc(half)     | mg/kg | <0.5       | <0.5       | <0.5       | <0.5       | <0.5       |
| Benzo(a)pyrene TEQ calc(PQL)      | mg/kg | <0.5       | <0.5       | <0.5       | <0.5       | <0.5       |
| Surrogate <i>p</i> -Terphenyl-d14 | %     | 95         | 96         | 92         | 96         | 92         |

| PAHs in Soil                   |       |            |            |            |            |            |
|--------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference                  |       | 220893-6   | 220893-7   | 220893-8   | 220893-9   | 220893-10  |
| Your Reference                 | UNITS | 106        | 106        | 107        | 107        | 108        |
| Depth                          |       | 0.26       | 0.5        | 0.1        | 0.22       | 0.3        |
| Date Sampled                   |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample                 |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                 | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed                  | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Naphthalene                    | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Acenaphthylene                 | mg/kg | 7.5        | <0.1       | <0.1       | <0.1       | <0.1       |
| Acenaphthene                   | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Fluorene                       | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Phenanthrene                   | mg/kg | 3.4        | <0.1       | <0.1       | <0.1       | <0.1       |
| Anthracene                     | mg/kg | 2.8        | <0.1       | <0.1       | <0.1       | <0.1       |
| Fluoranthene                   | mg/kg | 36         | <0.1       | <0.1       | <0.1       | <0.1       |
| Pyrene                         | mg/kg | 40         | <0.1       | <0.1       | <0.1       | <0.1       |
| Benzo(a)anthracene             | mg/kg | 21         | <0.1       | <0.1       | <0.1       | <0.1       |
| Chrysene                       | mg/kg | 32         | <0.1       | <0.1       | <0.1       | <0.1       |
| Benzo(b,j+k)fluoranthene       | mg/kg | 49         | <0.2       | <0.2       | <0.2       | <0.2       |
| Benzo(a)pyrene                 | mg/kg | 62         | <0.05      | 0.09       | <0.05      | <0.05      |
| Indeno(1,2,3-c,d)pyrene        | mg/kg | 35         | <0.1       | <0.1       | <0.1       | <0.1       |
| Dibenzo(a,h)anthracene         | mg/kg | 6.2        | <0.1       | <0.1       | <0.1       | <0.1       |
| Benzo(g,h,i)perylene           | mg/kg | 43         | <0.1       | <0.1       | <0.1       | <0.1       |
| Total +ve PAH's                | mg/kg | 340        | <0.05      | 0.09       | <0.05      | <0.05      |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | 80         | <0.5       | <0.5       | <0.5       | <0.5       |
| Benzo(a)pyrene TEQ calc(half)  | mg/kg | 80         | <0.5       | <0.5       | <0.5       | <0.5       |
| Benzo(a)pyrene TEQ calc(PQL)   | mg/kg | 80         | <0.5       | <0.5       | <0.5       | <0.5       |
| Surrogate p-Terphenyl-d14      | %     | 134        | 95         | 95         | 92         | 90         |

| PAHs in Soil                   |       |            |            |            |            |            |
|--------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference                  |       | 220893-11  | 220893-12  | 220893-13  | 220893-15  | 220893-16  |
| Your Reference                 | UNITS | 109        | 110        | 111        | 113        | 114        |
| Depth                          |       | 1.0        | 0.1        | 0-0.1      | 0.05       | 0.05       |
| Date Sampled                   |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample                 |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                 | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed                  | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Naphthalene                    | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Acenaphthylene                 | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | 0.1        |
| Acenaphthene                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Fluorene                       | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Phenanthrene                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | 0.4        |
| Anthracene                     | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | 0.2        |
| Fluoranthene                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | 1.2        |
| Pyrene                         | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | 1.1        |
| Benzo(a)anthracene             | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | 0.8        |
| Chrysene                       | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | 1.0        |
| Benzo(b,j+k)fluoranthene       | mg/kg | <0.2       | <0.2       | <0.2       | <0.2       | 0.8        |
| Benzo(a)pyrene                 | mg/kg | <0.05      | <0.05      | <0.05      | <0.05      | 0.90       |
| Indeno(1,2,3-c,d)pyrene        | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | 0.4        |
| Dibenzo(a,h)anthracene         | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Benzo(g,h,i)perylene           | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | 0.5        |
| Total +ve PAH's                | mg/kg | <0.05      | <0.05      | <0.05      | <0.05      | 7.4        |
| Benzo(a)pyrene TEQ calc (zero) | mg/kg | <0.5       | <0.5       | <0.5       | <0.5       | 1.1        |
| Benzo(a)pyrene TEQ calc(half)  | mg/kg | <0.5       | <0.5       | <0.5       | <0.5       | 1.2        |
| Benzo(a)pyrene TEQ calc(PQL)   | mg/kg | <0.5       | <0.5       | <0.5       | <0.5       | 1.2        |
| Surrogate p-Terphenyl-d14      | %     | 97         | 96         | 95         | 94         | 91         |

| PAHs in Soil                      |       |            |            |            |
|-----------------------------------|-------|------------|------------|------------|
| Our Reference                     |       | 220893-17  | 220893-18  | 220893-19  |
| Your Reference                    | UNITS | 115        | 116        | D1         |
| Depth                             |       | 0.3        | 0.05       | -          |
| Date Sampled                      |       | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample                    |       | Soil       | Soil       | Soil       |
| Date extracted                    | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed                     | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Naphthalene                       | mg/kg | <0.1       | <0.1       | <0.1       |
| Acenaphthylene                    | mg/kg | 0.1        | <0.1       | <0.1       |
| Acenaphthene                      | mg/kg | <0.1       | <0.1       | <0.1       |
| Fluorene                          | mg/kg | <0.1       | <0.1       | <0.1       |
| Phenanthrene                      | mg/kg | 0.4        | <0.1       | <0.1       |
| Anthracene                        | mg/kg | 0.1        | <0.1       | <0.1       |
| Fluoranthene                      | mg/kg | 1.2        | <0.1       | <0.1       |
| Pyrene                            | mg/kg | 1.1        | <0.1       | <0.1       |
| Benzo(a)anthracene                | mg/kg | 0.8        | <0.1       | <0.1       |
| Chrysene                          | mg/kg | 1.0        | <0.1       | <0.1       |
| Benzo(b,j+k)fluoranthene          | mg/kg | 0.8        | <0.2       | <0.2       |
| Benzo(a)pyrene                    | mg/kg | 0.83       | <0.05      | <0.05      |
| Indeno(1,2,3-c,d)pyrene           | mg/kg | 0.4        | <0.1       | <0.1       |
| Dibenzo(a,h)anthracene            | mg/kg | <0.1       | <0.1       | <0.1       |
| Benzo(g,h,i)perylene              | mg/kg | 0.4        | <0.1       | <0.1       |
| Total +ve PAH's                   | mg/kg | 7.1        | <0.05      | <0.05      |
| Benzo(a)pyrene TEQ calc (zero)    | mg/kg | 1.0        | <0.5       | <0.5       |
| Benzo(a)pyrene TEQ calc(half)     | mg/kg | 1.1        | <0.5       | <0.5       |
| Benzo(a)pyrene TEQ calc(PQL)      | mg/kg | 1.1        | <0.5       | <0.5       |
| Surrogate <i>p</i> -Terphenyl-d14 | %     | 92         | 92         | 86         |

| Organochlorine Pesticides in soil |       |            |            |            |            |            |
|-----------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference                     |       | 220893-1   | 220893-2   | 220893-3   | 220893-4   | 220893-5   |
| Your Reference                    | UNITS | 101        | 102        | 103        | 104        | 105        |
| Depth                             |       | 0.2        | 0.05       | 0.05       | 1.0        | 0.1        |
| Date Sampled                      |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample                    |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                    | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed                     | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| HCB                               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| alpha-BHC                         | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| gamma-BHC                         | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| beta-BHC                          | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Heptachlor                        | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| delta-BHC                         | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Aldrin                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Heptachlor Epoxide                | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| gamma-Chlordane                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| alpha-chlordane                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Endosulfan I                      | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| pp-DDE                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Dieldrin                          | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Endrin                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| pp-DDD                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Endosulfan II                     | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| pp-DDT                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Endrin Aldehyde                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Endosulfan Sulphate               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Methoxychlor                      | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Total +ve DDT+DDD+DDE             | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Surrogate TCMX                    | %     | 84         | 84         | 87         | 81         | 86         |

| Organochlorine Pesticides in soil |       |            |            |            |            |            |
|-----------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference                     |       | 220893-6   | 220893-7   | 220893-8   | 220893-9   | 220893-10  |
| Your Reference                    | UNITS | 106        | 106        | 107        | 107        | 108        |
| Depth                             |       | 0.26       | 0.5        | 0.1        | 0.22       | 0.3        |
| Date Sampled                      |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample                    |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                    | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed                     | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| HCB                               | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| alpha-BHC                         | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| gamma-BHC                         | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| beta-BHC                          | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Heptachlor                        | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| delta-BHC                         | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Aldrin                            | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Heptachlor Epoxide                | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| gamma-Chlordane                   | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| alpha-chlordane                   | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Endosulfan I                      | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| pp-DDE                            | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Dieldrin                          | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Endrin                            | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| pp-DDD                            | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Endosulfan II                     | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| pp-DDT                            | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Endrin Aldehyde                   | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Endosulfan Sulphate               | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Methoxychlor                      | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Total +ve DDT+DDD+DDE             | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Surrogate TCMX                    | %     | 123        | 87         | 83         | 88         | 82         |

| Organochlorine Pesticides in soil |       |            |            |            |            |            |
|-----------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference                     |       | 220893-11  | 220893-12  | 220893-13  | 220893-15  | 220893-16  |
| Your Reference                    | UNITS | 109        | 110        | 111        | 113        | 114        |
| Depth                             |       | 1.0        | 0.1        | 0-0.1      | 0.05       | 0.05       |
| Date Sampled                      |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample                    |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                    | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed                     | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| HCB                               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| alpha-BHC                         | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| gamma-BHC                         | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| beta-BHC                          | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Heptachlor                        | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| delta-BHC                         | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Aldrin                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Heptachlor Epoxide                | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| gamma-Chlordane                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| alpha-chlordane                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Endosulfan I                      | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| pp-DDE                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Dieldrin                          | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Endrin                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| pp-DDD                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Endosulfan II                     | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| pp-DDT                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Endrin Aldehyde                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Endosulfan Sulphate               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Methoxychlor                      | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Total +ve DDT+DDD+DDE             | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Surrogate TCMX                    | %     | 86         | 84         | 87         | 87         | 88         |

| Organochlorine Pesticides in soil |       |            |            |            |
|-----------------------------------|-------|------------|------------|------------|
| Our Reference                     |       | 220893-17  | 220893-18  | 220893-19  |
| Your Reference                    | UNITS | 115        | 116        | D1         |
| Depth                             |       | 0.3        | 0.05       | -          |
| Date Sampled                      |       | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample                    |       | Soil       | Soil       | Soil       |
| Date extracted                    | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed                     | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| HCB                               | mg/kg | <0.1       | <0.1       | <0.1       |
| alpha-BHC                         | mg/kg | <0.1       | <0.1       | <0.1       |
| gamma-BHC                         | mg/kg | <0.1       | <0.1       | <0.1       |
| beta-BHC                          | mg/kg | <0.1       | <0.1       | <0.1       |
| Heptachlor                        | mg/kg | <0.1       | <0.1       | <0.1       |
| delta-BHC                         | mg/kg | <0.1       | <0.1       | <0.1       |
| Aldrin                            | mg/kg | <0.1       | <0.1       | <0.1       |
| Heptachlor Epoxide                | mg/kg | <0.1       | <0.1       | <0.1       |
| gamma-Chlordane                   | mg/kg | <0.1       | <0.1       | <0.1       |
| alpha-chlordane                   | mg/kg | <0.1       | <0.1       | <0.1       |
| Endosulfan I                      | mg/kg | <0.1       | <0.1       | <0.1       |
| pp-DDE                            | mg/kg | <0.1       | <0.1       | <0.1       |
| Dieldrin                          | mg/kg | <0.1       | <0.1       | <0.1       |
| Endrin                            | mg/kg | <0.1       | <0.1       | <0.1       |
| pp-DDD                            | mg/kg | <0.1       | <0.1       | <0.1       |
| Endosulfan II                     | mg/kg | <0.1       | <0.1       | <0.1       |
| pp-DDT                            | mg/kg | <0.1       | <0.1       | <0.1       |
| Endrin Aldehyde                   | mg/kg | <0.1       | <0.1       | <0.1       |
| Endosulfan Sulphate               | mg/kg | <0.1       | <0.1       | <0.1       |
| Methoxychlor                      | mg/kg | <0.1       | <0.1       | <0.1       |
| Total +ve DDT+DDD+DDE             | mg/kg | <0.1       | <0.1       | <0.1       |
| Surrogate TCMX                    | %     | 87         | 87         | 86         |



| Organophosphorus Pesticides |       |            |            |            |            |            |
|-----------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference               |       | 220893-1   | 220893-2   | 220893-3   | 220893-4   | 220893-5   |
| Your Reference              | UNITS | 101        | 102        | 103        | 104        | 105        |
| Depth                       |       | 0.2        | 0.05       | 0.05       | 1.0        | 0.1        |
| Date Sampled                |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample              |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted              | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed               | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Azinphos-methyl (Guthion)   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Bromophos-ethyl             | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Chlorpyrifos                | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Chlorpyrifos-methyl         | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Diazinon                    | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Dichlorvos                  | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Dimethoate                  | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Ethion                      | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Fenitrothion                | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Malathion                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Parathion                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Ronnel                      | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Surrogate TCMX              | %     | 84         | 84         | 87         | 81         | 86         |

| Organophosphorus Pesticides |       |            |            |            |            |            |
|-----------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference               |       | 220893-6   | 220893-7   | 220893-8   | 220893-9   | 220893-10  |
| Your Reference              | UNITS | 106        | 106        | 107        | 107        | 108        |
| Depth                       |       | 0.26       | 0.5        | 0.1        | 0.22       | 0.3        |
| Date Sampled                |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample              |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted              | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed               | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Azinphos-methyl (Guthion)   | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Bromophos-ethyl             | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Chlorpyrifos                | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Chlorpyrifos-methyl         | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Diazinon                    | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Dichlorvos                  | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Dimethoate                  | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Ethion                      | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Fenitrothion                | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Malathion                   | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Parathion                   | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Ronnel                      | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Surrogate TCMX              | %     | 123        | 87         | 83         | 88         | 82         |

| Organophosphorus Pesticides |       |            |            |            |            |            |
|-----------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference               |       | 220893-11  | 220893-12  | 220893-13  | 220893-15  | 220893-16  |
| Your Reference              | UNITS | 109        | 110        | 111        | 113        | 114        |
| Depth                       |       | 1.0        | 0.1        | 0-0.1      | 0.05       | 0.05       |
| Date Sampled                |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample              |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted              | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed               | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Azinphos-methyl (Guthion)   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Bromophos-ethyl             | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Chlorpyrifos                | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Chlorpyrifos-methyl         | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Diazinon                    | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Dichlorvos                  | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Dimethoate                  | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Ethion                      | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Fenitrothion                | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Malathion                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Parathion                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Ronnel                      | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Surrogate TCMX              | %     | 86         | 84         | 87         | 87         | 88         |

| Organophosphorus Pesticides |       |            |            |            |
|-----------------------------|-------|------------|------------|------------|
| Our Reference               |       | 220893-17  | 220893-18  | 220893-19  |
| Your Reference              | UNITS | 115        | 116        | D1         |
| Depth                       |       | 0.3        | 0.05       | -          |
| Date Sampled                |       | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample              |       | Soil       | Soil       | Soil       |
| Date extracted              | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed               | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Azinphos-methyl (Guthion)   | mg/kg | <0.1       | <0.1       | <0.1       |
| Bromophos-ethyl             | mg/kg | <0.1       | <0.1       | <0.1       |
| Chlorpyrifos                | mg/kg | <0.1       | <0.1       | <0.1       |
| Chlorpyrifos-methyl         | mg/kg | <0.1       | <0.1       | <0.1       |
| Diazinon                    | mg/kg | <0.1       | <0.1       | <0.1       |
| Dichlorvos                  | mg/kg | <0.1       | <0.1       | <0.1       |
| Dimethoate                  | mg/kg | <0.1       | <0.1       | <0.1       |
| Ethion                      | mg/kg | <0.1       | <0.1       | <0.1       |
| Fenitrothion                | mg/kg | <0.1       | <0.1       | <0.1       |
| Malathion                   | mg/kg | <0.1       | <0.1       | <0.1       |
| Parathion                   | mg/kg | <0.1       | <0.1       | <0.1       |
| Ronnel                      | mg/kg | <0.1       | <0.1       | <0.1       |
| Surrogate TCMX              | %     | 87         | 87         | 86         |

| PCBs in Soil               |       |            |            |            |            |            |
|----------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference              |       | 220893-1   | 220893-2   | 220893-3   | 220893-4   | 220893-5   |
| Your Reference             | UNITS | 101        | 102        | 103        | 104        | 105        |
| Depth                      |       | 0.2        | 0.05       | 0.05       | 1.0        | 0.1        |
| Date Sampled               |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample             |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted             | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed              | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Aroclor 1016               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1221               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1232               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1242               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1248               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1254               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1260               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Total +ve PCBs (1016-1260) | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Surrogate TCLMX            | %     | 84         | 84         | 87         | 81         | 86         |

| PCBs in Soil               |       |            |            |            |            |            |
|----------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference              |       | 220893-6   | 220893-7   | 220893-8   | 220893-9   | 220893-10  |
| Your Reference             | UNITS | 106        | 106        | 107        | 107        | 108        |
| Depth                      |       | 0.26       | 0.5        | 0.1        | 0.22       | 0.3        |
| Date Sampled               |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample             |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted             | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed              | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Aroclor 1016               | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1221               | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1232               | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1242               | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1248               | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1254               | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1260               | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Total +ve PCBs (1016-1260) | mg/kg | <1         | <0.1       | <0.1       | <0.1       | <0.1       |
| Surrogate TCLMX            | %     | 123        | 87         | 83         | 88         | 82         |

| PCBs in Soil               |       |            |            |            |            |            |
|----------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference              |       | 220893-11  | 220893-12  | 220893-13  | 220893-15  | 220893-16  |
| Your Reference             | UNITS | 109        | 110        | 111        | 113        | 114        |
| Depth                      |       | 1.0        | 0.1        | 0-0.1      | 0.05       | 0.05       |
| Date Sampled               |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample             |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted             | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed              | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Aroclor 1016               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1221               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1232               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1242               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1248               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1254               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Aroclor 1260               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Total +ve PCBs (1016-1260) | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Surrogate TCLMX            | %     | 86         | 84         | 87         | 87         | 88         |

| PCBs in Soil               |       |            |            |            |
|----------------------------|-------|------------|------------|------------|
| Our Reference              |       | 220893-17  | 220893-18  | 220893-19  |
| Your Reference             | UNITS | 115        | 116        | D1         |
| Depth                      |       | 0.3        | 0.05       | -          |
| Date Sampled               |       | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample             |       | Soil       | Soil       | Soil       |
| Date extracted             | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed              | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Aroclor 1016               | mg/kg | <0.1       | <0.1       | <0.1       |
| Aroclor 1221               | mg/kg | <0.1       | <0.1       | <0.1       |
| Aroclor 1232               | mg/kg | <0.1       | <0.1       | <0.1       |
| Aroclor 1242               | mg/kg | <0.1       | <0.1       | <0.1       |
| Aroclor 1248               | mg/kg | <0.1       | <0.1       | <0.1       |
| Aroclor 1254               | mg/kg | <0.1       | <0.1       | <0.1       |
| Aroclor 1260               | mg/kg | <0.1       | <0.1       | <0.1       |
| Total +ve PCBs (1016-1260) | mg/kg | <0.1       | <0.1       | <0.1       |
| Surrogate TCLMX            | %     | 87         | 87         | 86         |

## Acid Extractable metals in soil

|                |       |            |            |            |            |            |
|----------------|-------|------------|------------|------------|------------|------------|
| Our Reference  |       | 220893-1   | 220893-2   | 220893-3   | 220893-4   | 220893-5   |
| Your Reference | UNITS | 101        | 102        | 103        | 104        | 105        |
| Depth          |       | 0.2        | 0.05       | 0.05       | 1.0        | 0.1        |
| Date Sampled   |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date prepared  | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed  | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Arsenic        | mg/kg | <4         | <4         | <4         | 4          | <4         |
| Cadmium        | mg/kg | <0.4       | <0.4       | <0.4       | <0.4       | <0.4       |
| Chromium       | mg/kg | 17         | 14         | 11         | 12         | 13         |
| Copper         | mg/kg | 9          | 6          | 35         | 12         | 14         |
| Lead           | mg/kg | 13         | 10         | 10         | 9          | 5          |
| Mercury        | mg/kg | 0.2        | <0.1       | <0.1       | <0.1       | <0.1       |
| Nickel         | mg/kg | 10         | 6          | 21         | 11         | 15         |
| Zinc           | mg/kg | 26         | 15         | 65         | 32         | 53         |
| Iron           | mg/kg | 18,000     | 11,000     | 11,000     | 20,000     | 15,000     |
| Aluminium      | mg/kg | 9,800      | 6,700      | 7,400      | 13,000     | 5,400      |
| Selenium       | mg/kg | <2         | <2         | <2         | <2         | <2         |
| Manganese      | mg/kg | 430        | 270        | 170        | 440        | 200        |

## Acid Extractable metals in soil

|                |       |            |            |            |            |            |
|----------------|-------|------------|------------|------------|------------|------------|
| Our Reference  |       | 220893-6   | 220893-7   | 220893-8   | 220893-9   | 220893-10  |
| Your Reference | UNITS | 106        | 106        | 107        | 107        | 108        |
| Depth          |       | 0.26       | 0.5        | 0.1        | 0.22       | 0.3        |
| Date Sampled   |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date prepared  | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed  | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Arsenic        | mg/kg | 7          | <4         | 6          | 5          | <4         |
| Cadmium        | mg/kg | <0.4       | <0.4       | <0.4       | <0.4       | <0.4       |
| Chromium       | mg/kg | 6          | 12         | 5          | 6          | 12         |
| Copper         | mg/kg | 8          | 10         | 3          | 10         | 12         |
| Lead           | mg/kg | 5          | 9          | 7          | 6          | 3          |
| Mercury        | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Nickel         | mg/kg | 8          | 10         | 4          | 24         | 21         |
| Zinc           | mg/kg | 81         | 23         | 20         | 15         | 32         |
| Iron           | mg/kg | 9,800      | 17,000     | 14,000     | 15,000     | 24,000     |
| Aluminium      | mg/kg | 3,900      | 13,000     | 3,600      | 4,100      | 9,200      |
| Selenium       | mg/kg | <2         | <2         | <2         | <2         | <2         |
| Manganese      | mg/kg | 140        | 350        | 120        | 170        | 220        |

## Acid Extractable metals in soil

|                |       |            |            |            |            |            |
|----------------|-------|------------|------------|------------|------------|------------|
| Our Reference  |       | 220893-11  | 220893-12  | 220893-13  | 220893-15  | 220893-16  |
| Your Reference | UNITS | 109        | 110        | 111        | 113        | 114        |
| Depth          |       | 1.0        | 0.1        | 0-0.1      | 0.05       | 0.05       |
| Date Sampled   |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date prepared  | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed  | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Arsenic        | mg/kg | <4         | <4         | <4         | <4         | 4          |
| Cadmium        | mg/kg | <0.4       | <0.4       | <0.4       | <0.4       | <0.4       |
| Chromium       | mg/kg | 20         | 17         | 15         | 17         | 18         |
| Copper         | mg/kg | 11         | 11         | 27         | 11         | 11         |
| Lead           | mg/kg | 8          | 14         | 9          | 12         | 40         |
| Mercury        | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Nickel         | mg/kg | 14         | 12         | 22         | 16         | 12         |
| Zinc           | mg/kg | 20         | 28         | 100        | 36         | 39         |
| Iron           | mg/kg | 25,000     | 18,000     | 19,000     | 19,000     | 22,000     |
| Aluminium      | mg/kg | 19,000     | 10,000     | 9,400      | 12,000     | 8,800      |
| Selenium       | mg/kg | <2         | <2         | <2         | <2         | <2         |
| Manganese      | mg/kg | 220        | 540        | 260        | 340        | 210        |

## Acid Extractable metals in soil

|                |       |            |            |            |                       |
|----------------|-------|------------|------------|------------|-----------------------|
| Our Reference  |       | 220893-17  | 220893-18  | 220893-19  | 220893-20             |
| Your Reference | UNITS | 115        | 116        | D1         | 109 -<br>[TRIPLICATE] |
| Depth          |       | 0.3        | 0.05       | -          | 1.0                   |
| Date Sampled   |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019            |
| Type of sample |       | Soil       | Soil       | Soil       | Soil                  |
| Date prepared  | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019            |
| Date analysed  | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019            |
| Arsenic        | mg/kg | <4         | <4         | <4         | 4                     |
| Cadmium        | mg/kg | <0.4       | <0.4       | <0.4       | <0.4                  |
| Chromium       | mg/kg | 16         | 18         | 12         | 21                    |
| Copper         | mg/kg | 12         | 13         | 42         | 11                    |
| Lead           | mg/kg | 26         | 11         | 10         | 10                    |
| Mercury        | mg/kg | <0.1       | <0.1       | <0.1       | <0.1                  |
| Nickel         | mg/kg | 11         | 14         | 21         | 16                    |
| Zinc           | mg/kg | 38         | 42         | 82         | 23                    |
| Iron           | mg/kg | 19,000     | 19,000     | 11,000     | 26,000                |
| Aluminium      | mg/kg | 9,800      | 11,000     | 8,000      | 19,000                |
| Selenium       | mg/kg | <2         | <2         | <2         | <2                    |
| Manganese      | mg/kg | 350        | 320        | 180        | 230                   |



| Moisture       |       |            |            |            |            |            |
|----------------|-------|------------|------------|------------|------------|------------|
| Our Reference  | UNITS | 220893-1   | 220893-2   | 220893-3   | 220893-4   | 220893-5   |
| Your Reference |       | 101        | 102        | 103        | 104        | 105        |
| Depth          |       | 0.2        | 0.05       | 0.05       | 1.0        | 0.1        |
| Date Sampled   |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date prepared  | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed  | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Moisture       | %     | 10         | 7.8        | 15         | 17         | 2.9        |

| Moisture       |       |            |            |            |            |            |
|----------------|-------|------------|------------|------------|------------|------------|
| Our Reference  | UNITS | 220893-6   | 220893-7   | 220893-8   | 220893-9   | 220893-10  |
| Your Reference |       | 106        | 106        | 107        | 107        | 108        |
| Depth          |       | 0.26       | 0.5        | 0.1        | 0.22       | 0.3        |
| Date Sampled   |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date prepared  | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed  | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Moisture       | %     | 5.3        | 12         | 7.2        | 13         | 15         |

| Moisture       |       |            |            |            |            |            |
|----------------|-------|------------|------------|------------|------------|------------|
| Our Reference  | UNITS | 220893-11  | 220893-12  | 220893-13  | 220893-15  | 220893-16  |
| Your Reference |       | 109        | 110        | 111        | 113        | 114        |
| Depth          |       | 1.0        | 0.1        | 0-0.1      | 0.05       | 0.05       |
| Date Sampled   |       | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date prepared  | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed  | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Moisture       | %     | 17         | 11         | 14         | 14         | 8.8        |

| Moisture       |       |            |            |            |
|----------------|-------|------------|------------|------------|
| Our Reference  | UNITS | 220893-17  | 220893-18  | 220893-19  |
| Your Reference |       | 115        | 116        | D1         |
| Depth          |       | 0.3        | 0.05       | -          |
| Date Sampled   |       | 01/07/2019 | 01/07/2019 | 01/07/2019 |
| Type of sample |       | Soil       | Soil       | Soil       |
| Date prepared  | -     | 04/07/2019 | 04/07/2019 | 04/07/2019 |
| Date analysed  | -     | 05/07/2019 | 05/07/2019 | 05/07/2019 |
| Moisture       | %     | 8.8        | 11         | 9.7        |

| Asbestos ID - soils |       |                                                                                   |
|---------------------|-------|-----------------------------------------------------------------------------------|
| Our Reference       |       | 220893-13                                                                         |
| Your Reference      | UNITS | 111                                                                               |
| Depth               |       | 0-0.1                                                                             |
| Date Sampled        |       | 01/07/2019                                                                        |
| Type of sample      |       | Soil                                                                              |
| Date analysed       | -     | 05/07/2019                                                                        |
| Sample mass tested  | g     | Approx. 30g                                                                       |
| Sample Description  | -     | Brown coarse-grained soil & rocks                                                 |
| Asbestos ID in soil | -     | No asbestos detected at reporting limit of 0.1g/kg<br><br>Organic fibres detected |
| Trace Analysis      | -     | No asbestos detected                                                              |

| Asbestos ID - materials    |       |                                                           |
|----------------------------|-------|-----------------------------------------------------------|
| Our Reference              | UNITS | 220893-14                                                 |
| Your Reference             |       | 111/F                                                     |
| Depth                      |       | -                                                         |
| Date Sampled               |       | 01/07/2019                                                |
| Type of sample             |       | Material                                                  |
| Date analysed              | -     | 04/07/2019                                                |
| Mass / Dimension of Sample | -     | 75x45x6mm                                                 |
| Sample Description         | -     | Beige<br>compressed fibre<br>cement material              |
| Asbestos ID in materials   | -     | No asbestos<br>detected<br><br>Organic fibres<br>detected |

| Method ID         | Methodology Summary                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ASB-001</b>    | Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.                                                                                                                                                                                                                                                              |
| <b>Inorg-008</b>  | Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Metals-020</b> | Determination of various metals by ICP-AES.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Metals-021</b> | Determination of Mercury by Cold Vapour AAS.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Org-003</b>    | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br>F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.                                                                                                                                                                                         |
| <b>Org-003</b>    | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br><br>F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.<br><br>Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40). |
| <b>Org-005</b>    | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Org-005</b>    | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.<br>Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.                                                                                                                                                                                           |
| <b>Org-006</b>    | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Org-006</b>    | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.<br>Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PCBs" is simply a sum of the positive individual PCBs.                                                                                                                                                                                                                   |
| <b>Org-008</b>    | Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.                                                                                                                                                                                                                                                                                                                                                                     |

| Method ID      | Methodology Summary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Org-012</b> | <p>Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.</p> <p>For soil results:-</p> <ol style="list-style-type: none"> <li>1. 'EQ PQL' values are assuming all contributing PAHs reported as &lt;PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present.</li> <li>2. 'EQ zero' values are assuming all contributing PAHs reported as &lt;PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL.</li> <li>3. 'EQ half PQL' values are assuming all contributing PAHs reported as &lt;PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above.</li> </ol> <p>Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.</p> |
| <b>Org-014</b> | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Org-016</b> | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Org-016</b> | <p>Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.</p> <p>Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

| QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil |       |     |         |            |   | Duplicate  |            |     | Spike Recovery % |            |
|---------------------------------------------|-------|-----|---------|------------|---|------------|------------|-----|------------------|------------|
| Test Description                            | Units | PQL | Method  | Blank      | # | Base       | Dup.       | RPD | LCS-2            | 220893-2   |
| Date extracted                              | -     |     |         | 04/07/2019 | 1 | 04/07/2019 | 04/07/2019 |     | 04/07/2019       | 04/07/2019 |
| Date analysed                               | -     |     |         | 05/07/2019 | 1 | 05/07/2019 | 05/07/2019 |     | 05/07/2019       | 05/07/2019 |
| TRH C <sub>6</sub> - C <sub>9</sub>         | mg/kg | 25  | Org-016 | <25        | 1 | <25        | <25        | 0   | 77               | 75         |
| TRH C <sub>6</sub> - C <sub>10</sub>        | mg/kg | 25  | Org-016 | <25        | 1 | <25        | <25        | 0   | 77               | 75         |
| Benzene                                     | mg/kg | 0.2 | Org-016 | <0.2       | 1 | <0.2       | <0.2       | 0   | 75               | 76         |
| Toluene                                     | mg/kg | 0.5 | Org-016 | <0.5       | 1 | <0.5       | <0.5       | 0   | 79               | 81         |
| Ethylbenzene                                | mg/kg | 1   | Org-016 | <1         | 1 | <1         | <1         | 0   | 79               | 74         |
| m+p-xylene                                  | mg/kg | 2   | Org-016 | <2         | 1 | <2         | <2         | 0   | 77               | 72         |
| o-Xylene                                    | mg/kg | 1   | Org-016 | <1         | 1 | <1         | <1         | 0   | 80               | 75         |
| naphthalene                                 | mg/kg | 1   | Org-014 | <1         | 1 | <1         | <1         | 0   | [NT]             | [NT]       |
| Surrogate aaa-Trifluorotoluene              | %     |     | Org-016 | 93         | 1 | 72         | 78         | 8   | 82               | 88         |

| QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil |       |     |         |       |    | Duplicate  |            | Spike Recovery % |      |      |
|---------------------------------------------|-------|-----|---------|-------|----|------------|------------|------------------|------|------|
| Test Description                            | Units | PQL | Method  | Blank | #  | Base       | Dup.       | RPD              | [NT] | [NT] |
| Date extracted                              | -     |     |         | [NT]  | 11 | 04/07/2019 | 04/07/2019 |                  | [NT] | [NT] |
| Date analysed                               | -     |     |         | [NT]  | 11 | 05/07/2019 | 05/07/2019 |                  | [NT] | [NT] |
| TRH C <sub>6</sub> - C <sub>9</sub>         | mg/kg | 25  | Org-016 | [NT]  | 11 | <25        | <25        | 0                | [NT] | [NT] |
| TRH C <sub>6</sub> - C <sub>10</sub>        | mg/kg | 25  | Org-016 | [NT]  | 11 | <25        | <25        | 0                | [NT] | [NT] |
| Benzene                                     | mg/kg | 0.2 | Org-016 | [NT]  | 11 | <0.2       | <0.2       | 0                | [NT] | [NT] |
| Toluene                                     | mg/kg | 0.5 | Org-016 | [NT]  | 11 | <0.5       | <0.5       | 0                | [NT] | [NT] |
| Ethylbenzene                                | mg/kg | 1   | Org-016 | [NT]  | 11 | <1         | <1         | 0                | [NT] | [NT] |
| m+p-xylene                                  | mg/kg | 2   | Org-016 | [NT]  | 11 | <2         | <2         | 0                | [NT] | [NT] |
| o-Xylene                                    | mg/kg | 1   | Org-016 | [NT]  | 11 | <1         | <1         | 0                | [NT] | [NT] |
| naphthalene                                 | mg/kg | 1   | Org-014 | [NT]  | 11 | <1         | <1         | 0                | [NT] | [NT] |
| Surrogate aaa-Trifluorotoluene              | %     |     | Org-016 | [NT]  | 11 | 84         | 90         | 7                | [NT] | [NT] |

| QUALITY CONTROL: svTRH (C10-C40) in Soil |       |     |         |            | Duplicate |            |            | Spike Recovery % |            |            |
|------------------------------------------|-------|-----|---------|------------|-----------|------------|------------|------------------|------------|------------|
| Test Description                         | Units | PQL | Method  | Blank      | #         | Base       | Dup.       | RPD              | LCS-2      | 220893-2   |
| Date extracted                           | -     |     |         | 04/07/2019 | 1         | 04/07/2019 | 04/07/2019 |                  | 04/07/2019 | 04/07/2019 |
| Date analysed                            | -     |     |         | 04/07/2019 | 1         | 04/07/2019 | 04/07/2019 |                  | 04/07/2019 | 04/07/2019 |
| TRH C <sub>10</sub> - C <sub>14</sub>    | mg/kg | 50  | Org-003 | <50        | 1         | <50        | <50        | 0                | 100        | 101        |
| TRH C <sub>15</sub> - C <sub>28</sub>    | mg/kg | 100 | Org-003 | <100       | 1         | <100       | <100       | 0                | 115        | 120        |
| TRH C <sub>29</sub> - C <sub>36</sub>    | mg/kg | 100 | Org-003 | <100       | 1         | <100       | <100       | 0                | 86         | 81         |
| TRH >C <sub>10</sub> -C <sub>16</sub>    | mg/kg | 50  | Org-003 | <50        | 1         | <50        | <50        | 0                | 100        | 101        |
| TRH >C <sub>16</sub> -C <sub>34</sub>    | mg/kg | 100 | Org-003 | <100       | 1         | <100       | <100       | 0                | 115        | 120        |
| TRH >C <sub>34</sub> -C <sub>40</sub>    | mg/kg | 100 | Org-003 | <100       | 1         | <100       | <100       | 0                | 86         | 81         |
| Surrogate o-Terphenyl                    | %     |     | Org-003 | 84         | 1         | 105        | 90         | 15               | 116        | 108        |

| QUALITY CONTROL: svTRH (C10-C40) in Soil |       |     |         |       | Duplicate |            |            | Spike Recovery % |      |      |
|------------------------------------------|-------|-----|---------|-------|-----------|------------|------------|------------------|------|------|
| Test Description                         | Units | PQL | Method  | Blank | #         | Base       | Dup.       | RPD              | [NT] | [NT] |
| Date extracted                           | -     |     |         | [NT]  | 6         | 04/07/2019 | 10/07/2019 |                  | [NT] | [NT] |
| Date analysed                            | -     |     |         | [NT]  | 6         | 04/07/2019 | 10/07/2019 |                  | [NT] | [NT] |
| TRH C <sub>10</sub> - C <sub>14</sub>    | mg/kg | 50  | Org-003 | [NT]  | 6         | <50        | <50        | 0                | [NT] | [NT] |
| TRH C <sub>15</sub> - C <sub>28</sub>    | mg/kg | 100 | Org-003 | [NT]  | 6         | 1300       | 1200       | 8                | [NT] | [NT] |
| TRH C <sub>29</sub> - C <sub>36</sub>    | mg/kg | 100 | Org-003 | [NT]  | 6         | 1200       | 1000       | 18               | [NT] | [NT] |
| TRH >C <sub>10</sub> -C <sub>16</sub>    | mg/kg | 50  | Org-003 | [NT]  | 6         | 62         | <50        | 21               | [NT] | [NT] |
| TRH >C <sub>16</sub> -C <sub>34</sub>    | mg/kg | 100 | Org-003 | [NT]  | 6         | 2300       | 2000       | 14               | [NT] | [NT] |
| TRH >C <sub>34</sub> -C <sub>40</sub>    | mg/kg | 100 | Org-003 | [NT]  | 6         | 600        | 670        | 11               | [NT] | [NT] |
| Surrogate o-Terphenyl                    | %     |     | Org-003 | [NT]  | 6         | #          | 110        |                  | [NT] | [NT] |

| QUALITY CONTROL: svTRH (C10-C40) in Soil |       |     |         |       | Duplicate |            |            | Spike Recovery % |      |      |
|------------------------------------------|-------|-----|---------|-------|-----------|------------|------------|------------------|------|------|
| Test Description                         | Units | PQL | Method  | Blank | #         | Base       | Dup.       | RPD              | [NT] | [NT] |
| Date extracted                           | -     |     |         | [NT]  | 11        | 04/07/2019 | 04/07/2019 |                  | [NT] | [NT] |
| Date analysed                            | -     |     |         | [NT]  | 11        | 04/07/2019 | 04/07/2019 |                  | [NT] | [NT] |
| TRH C <sub>10</sub> - C <sub>14</sub>    | mg/kg | 50  | Org-003 | [NT]  | 11        | <50        | <50        | 0                | [NT] | [NT] |
| TRH C <sub>15</sub> - C <sub>28</sub>    | mg/kg | 100 | Org-003 | [NT]  | 11        | <100       | <100       | 0                | [NT] | [NT] |
| TRH C <sub>29</sub> - C <sub>36</sub>    | mg/kg | 100 | Org-003 | [NT]  | 11        | <100       | <100       | 0                | [NT] | [NT] |
| TRH >C <sub>10</sub> -C <sub>16</sub>    | mg/kg | 50  | Org-003 | [NT]  | 11        | <50        | <50        | 0                | [NT] | [NT] |
| TRH >C <sub>16</sub> -C <sub>34</sub>    | mg/kg | 100 | Org-003 | [NT]  | 11        | <100       | <100       | 0                | [NT] | [NT] |
| TRH >C <sub>34</sub> -C <sub>40</sub>    | mg/kg | 100 | Org-003 | [NT]  | 11        | <100       | <100       | 0                | [NT] | [NT] |
| Surrogate o-Terphenyl                    | %     |     | Org-003 | [NT]  | 11        | 88         | 88         | 0                | [NT] | [NT] |

| QUALITY CONTROL: PAHs in Soil |       |      |         |            |   | Duplicate  |            |     | Spike Recovery % |            |
|-------------------------------|-------|------|---------|------------|---|------------|------------|-----|------------------|------------|
| Test Description              | Units | PQL  | Method  | Blank      | # | Base       | Dup.       | RPD | LCS-2            | 220893-2   |
| Date extracted                | -     |      |         | 04/07/2019 | 1 | 04/07/2019 | 04/07/2019 |     | 04/07/2019       | 04/07/2019 |
| Date analysed                 | -     |      |         | 05/07/2019 | 1 | 05/07/2019 | 05/07/2019 |     | 05/07/2019       | 05/07/2019 |
| Naphthalene                   | mg/kg | 0.1  | Org-012 | <0.1       | 1 | <0.1       | <0.1       | 0   | 118              | 101        |
| Acenaphthylene                | mg/kg | 0.1  | Org-012 | <0.1       | 1 | <0.1       | <0.1       | 0   | [NT]             | [NT]       |
| Acenaphthene                  | mg/kg | 0.1  | Org-012 | <0.1       | 1 | <0.1       | <0.1       | 0   | [NT]             | [NT]       |
| Fluorene                      | mg/kg | 0.1  | Org-012 | <0.1       | 1 | <0.1       | <0.1       | 0   | 104              | 101        |
| Phenanthrene                  | mg/kg | 0.1  | Org-012 | <0.1       | 1 | <0.1       | <0.1       | 0   | 98               | 90         |
| Anthracene                    | mg/kg | 0.1  | Org-012 | <0.1       | 1 | <0.1       | <0.1       | 0   | [NT]             | [NT]       |
| Fluoranthene                  | mg/kg | 0.1  | Org-012 | <0.1       | 1 | <0.1       | <0.1       | 0   | 106              | 97         |
| Pyrene                        | mg/kg | 0.1  | Org-012 | <0.1       | 1 | <0.1       | <0.1       | 0   | 108              | 105        |
| Benzo(a)anthracene            | mg/kg | 0.1  | Org-012 | <0.1       | 1 | <0.1       | <0.1       | 0   | [NT]             | [NT]       |
| Chrysene                      | mg/kg | 0.1  | Org-012 | <0.1       | 1 | <0.1       | <0.1       | 0   | 134              | 122        |
| Benzo(b,j+k)fluoranthene      | mg/kg | 0.2  | Org-012 | <0.2       | 1 | <0.2       | <0.2       | 0   | [NT]             | [NT]       |
| Benzo(a)pyrene                | mg/kg | 0.05 | Org-012 | <0.05      | 1 | <0.05      | <0.05      | 0   | 110              | 96         |
| Indeno(1,2,3-c,d)pyrene       | mg/kg | 0.1  | Org-012 | <0.1       | 1 | <0.1       | <0.1       | 0   | [NT]             | [NT]       |
| Dibenzo(a,h)anthracene        | mg/kg | 0.1  | Org-012 | <0.1       | 1 | <0.1       | <0.1       | 0   | [NT]             | [NT]       |
| Benzo(g,h,i)perylene          | mg/kg | 0.1  | Org-012 | <0.1       | 1 | <0.1       | <0.1       | 0   | [NT]             | [NT]       |
| Surrogate p-Terphenyl-d14     | %     |      | Org-012 | 99         | 1 | 95         | 100        | 5   | 101              | 97         |

| QUALITY CONTROL: PAHs in Soil |       |      |         |       |    | Duplicate  |            |     | Spike Recovery % |      |
|-------------------------------|-------|------|---------|-------|----|------------|------------|-----|------------------|------|
| Test Description              | Units | PQL  | Method  | Blank | #  | Base       | Dup.       | RPD | [NT]             | [NT] |
| Date extracted                | -     |      |         | [NT]  | 11 | 04/07/2019 | 04/07/2019 |     | [NT]             | [NT] |
| Date analysed                 | -     |      |         | [NT]  | 11 | 05/07/2019 | 05/07/2019 |     | [NT]             | [NT] |
| Naphthalene                   | mg/kg | 0.1  | Org-012 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Acenaphthylene                | mg/kg | 0.1  | Org-012 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Acenaphthene                  | mg/kg | 0.1  | Org-012 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Fluorene                      | mg/kg | 0.1  | Org-012 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Phenanthrene                  | mg/kg | 0.1  | Org-012 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Anthracene                    | mg/kg | 0.1  | Org-012 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Fluoranthene                  | mg/kg | 0.1  | Org-012 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Pyrene                        | mg/kg | 0.1  | Org-012 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Benzo(a)anthracene            | mg/kg | 0.1  | Org-012 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Chrysene                      | mg/kg | 0.1  | Org-012 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Benzo(b,j+k)fluoranthene      | mg/kg | 0.2  | Org-012 | [NT]  | 11 | <0.2       | <0.2       | 0   | [NT]             | [NT] |
| Benzo(a)pyrene                | mg/kg | 0.05 | Org-012 | [NT]  | 11 | <0.05      | <0.05      | 0   | [NT]             | [NT] |
| Indeno(1,2,3-c,d)pyrene       | mg/kg | 0.1  | Org-012 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Dibenzo(a,h)anthracene        | mg/kg | 0.1  | Org-012 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Benzo(g,h,i)perylene          | mg/kg | 0.1  | Org-012 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Surrogate p-Terphenyl-d14     | %     |      | Org-012 | [NT]  | 11 | 97         | 101        | 4   | [NT]             | [NT] |



| QUALITY CONTROL: Organochlorine Pesticides in soil |       |     |         |            | Duplicate |            |            | Spike Recovery % |            |            |
|----------------------------------------------------|-------|-----|---------|------------|-----------|------------|------------|------------------|------------|------------|
| Test Description                                   | Units | PQL | Method  | Blank      | #         | Base       | Dup.       | RPD              | LCS-2      | 220893-2   |
| Date extracted                                     | -     |     |         | 04/07/2019 | 1         | 04/07/2019 | 04/07/2019 |                  | 04/07/2019 | 04/07/2019 |
| Date analysed                                      | -     |     |         | 05/07/2019 | 1         | 05/07/2019 | 05/07/2019 |                  | 05/07/2019 | 05/07/2019 |
| HCB                                                | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| alpha-BHC                                          | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | 106        | 101        |
| gamma-BHC                                          | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| beta-BHC                                           | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | 110        | 105        |
| Heptachlor                                         | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | 84         | 94         |
| delta-BHC                                          | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| Aldrin                                             | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | 110        | 122        |
| Heptachlor Epoxide                                 | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | 118        | 112        |
| gamma-Chlordane                                    | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| alpha-chlordane                                    | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| Endosulfan I                                       | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| pp-DDE                                             | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | 110        | 116        |
| Dieldrin                                           | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | 128        | 127        |
| Endrin                                             | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | 85         | 86         |
| pp-DDD                                             | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | 88         | 92         |
| Endosulfan II                                      | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| pp-DDT                                             | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| Endrin Aldehyde                                    | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| Endosulfan Sulphate                                | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | 104        | 105        |
| Methoxychlor                                       | mg/kg | 0.1 | Org-005 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| Surrogate TCMX                                     | %     |     | Org-005 | 88         | 1         | 84         | 91         | 8                | 98         | 90         |

| QUALITY CONTROL: Organochlorine Pesticides in soil |       |     |         |       |    | Duplicate  |            |     | Spike Recovery % |      |
|----------------------------------------------------|-------|-----|---------|-------|----|------------|------------|-----|------------------|------|
| Test Description                                   | Units | PQL | Method  | Blank | #  | Base       | Dup.       | RPD | [NT]             | [NT] |
| Date extracted                                     | -     |     |         | [NT]  | 11 | 04/07/2019 | 04/07/2019 |     | [NT]             | [NT] |
| Date analysed                                      | -     |     |         | [NT]  | 11 | 05/07/2019 | 05/07/2019 |     | [NT]             | [NT] |
| HCB                                                | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| alpha-BHC                                          | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| gamma-BHC                                          | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| beta-BHC                                           | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Heptachlor                                         | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| delta-BHC                                          | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Aldrin                                             | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Heptachlor Epoxide                                 | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| gamma-Chlordane                                    | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| alpha-chlordane                                    | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Endosulfan I                                       | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| pp-DDE                                             | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Dieldrin                                           | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Endrin                                             | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| pp-DDD                                             | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Endosulfan II                                      | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| pp-DDT                                             | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Endrin Aldehyde                                    | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Endosulfan Sulphate                                | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Methoxychlor                                       | mg/kg | 0.1 | Org-005 | [NT]  | 11 | <0.1       | <0.1       | 0   | [NT]             | [NT] |
| Surrogate TCMX                                     | %     |     | Org-005 | [NT]  | 11 | 86         | 88         | 2   | [NT]             | [NT] |

| QUALITY CONTROL: Organophosphorus Pesticides |       |     |         |            | Duplicate |            |            | Spike Recovery % |            |            |
|----------------------------------------------|-------|-----|---------|------------|-----------|------------|------------|------------------|------------|------------|
| Test Description                             | Units | PQL | Method  | Blank      | #         | Base       | Dup.       | RPD              | LCS-2      | 220893-2   |
| Date extracted                               | -     |     |         | 04/07/2019 | 1         | 04/07/2019 | 04/07/2019 |                  | 04/07/2019 | 04/07/2019 |
| Date analysed                                | -     |     |         | 05/07/2019 | 1         | 05/07/2019 | 05/07/2019 |                  | 05/07/2019 | 05/07/2019 |
| Azinphos-methyl (Guthion)                    | mg/kg | 0.1 | Org-008 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| Bromophos-ethyl                              | mg/kg | 0.1 | Org-008 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| Chlorpyrifos                                 | mg/kg | 0.1 | Org-008 | <0.1       | 1         | <0.1       | <0.1       | 0                | 94         | 88         |
| Chlorpyrifos-methyl                          | mg/kg | 0.1 | Org-008 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| Diazinon                                     | mg/kg | 0.1 | Org-008 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| Dichlorvos                                   | mg/kg | 0.1 | Org-008 | <0.1       | 1         | <0.1       | <0.1       | 0                | 100        | 81         |
| Dimethoate                                   | mg/kg | 0.1 | Org-008 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| Ethion                                       | mg/kg | 0.1 | Org-008 | <0.1       | 1         | <0.1       | <0.1       | 0                | 96         | 94         |
| Fenitrothion                                 | mg/kg | 0.1 | Org-008 | <0.1       | 1         | <0.1       | <0.1       | 0                | 68         | 66         |
| Malathion                                    | mg/kg | 0.1 | Org-008 | <0.1       | 1         | <0.1       | <0.1       | 0                | 120        | 114        |
| Parathion                                    | mg/kg | 0.1 | Org-008 | <0.1       | 1         | <0.1       | <0.1       | 0                | 96         | 89         |
| Ronnel                                       | mg/kg | 0.1 | Org-008 | <0.1       | 1         | <0.1       | <0.1       | 0                | 100        | 97         |
| Surrogate TCMX                               | %     |     | Org-008 | 88         | 1         | 84         | 91         | 8                | 98         | 90         |

| QUALITY CONTROL: Organophosphorus Pesticides |       |     |         |       | Duplicate |            |            | Spike Recovery % |      |      |
|----------------------------------------------|-------|-----|---------|-------|-----------|------------|------------|------------------|------|------|
| Test Description                             | Units | PQL | Method  | Blank | #         | Base       | Dup.       | RPD              | [NT] | [NT] |
| Date extracted                               | -     |     |         | [NT]  | 11        | 04/07/2019 | 04/07/2019 |                  | [NT] | [NT] |
| Date analysed                                | -     |     |         | [NT]  | 11        | 05/07/2019 | 05/07/2019 |                  | [NT] | [NT] |
| Azinphos-methyl (Guthion)                    | mg/kg | 0.1 | Org-008 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Bromophos-ethyl                              | mg/kg | 0.1 | Org-008 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Chlorpyrifos                                 | mg/kg | 0.1 | Org-008 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Chlorpyrifos-methyl                          | mg/kg | 0.1 | Org-008 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Diazinon                                     | mg/kg | 0.1 | Org-008 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Dichlorvos                                   | mg/kg | 0.1 | Org-008 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Dimethoate                                   | mg/kg | 0.1 | Org-008 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Ethion                                       | mg/kg | 0.1 | Org-008 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Fenitrothion                                 | mg/kg | 0.1 | Org-008 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Malathion                                    | mg/kg | 0.1 | Org-008 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Parathion                                    | mg/kg | 0.1 | Org-008 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Ronnel                                       | mg/kg | 0.1 | Org-008 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Surrogate TCMX                               | %     |     | Org-008 | [NT]  | 11        | 86         | 88         | 2                | [NT] | [NT] |

| QUALITY CONTROL: PCBs in Soil |       |     |         |            | Duplicate |            |            | Spike Recovery % |            |            |
|-------------------------------|-------|-----|---------|------------|-----------|------------|------------|------------------|------------|------------|
| Test Description              | Units | PQL | Method  | Blank      | #         | Base       | Dup.       | RPD              | LCS-2      | 220893-2   |
| Date extracted                | -     |     |         | 04/07/2019 | 1         | 04/07/2019 | 04/07/2019 |                  | 04/07/2019 | 04/07/2019 |
| Date analysed                 | -     |     |         | 05/07/2019 | 1         | 05/07/2019 | 05/07/2019 |                  | 05/07/2019 | 05/07/2019 |
| Aroclor 1016                  | mg/kg | 0.1 | Org-006 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| Aroclor 1221                  | mg/kg | 0.1 | Org-006 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| Aroclor 1232                  | mg/kg | 0.1 | Org-006 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| Aroclor 1242                  | mg/kg | 0.1 | Org-006 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| Aroclor 1248                  | mg/kg | 0.1 | Org-006 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| Aroclor 1254                  | mg/kg | 0.1 | Org-006 | <0.1       | 1         | <0.1       | <0.1       | 0                | 120        | 80         |
| Aroclor 1260                  | mg/kg | 0.1 | Org-006 | <0.1       | 1         | <0.1       | <0.1       | 0                | [NT]       | [NT]       |
| Surrogate TCLMX               | %     |     | Org-006 | 88         | 1         | 84         | 91         | 8                | 98         | 90         |

| QUALITY CONTROL: PCBs in Soil |       |     |         |       | Duplicate |            |            | Spike Recovery % |      |      |
|-------------------------------|-------|-----|---------|-------|-----------|------------|------------|------------------|------|------|
| Test Description              | Units | PQL | Method  | Blank | #         | Base       | Dup.       | RPD              | [NT] | [NT] |
| Date extracted                | -     |     |         | [NT]  | 11        | 04/07/2019 | 04/07/2019 |                  | [NT] | [NT] |
| Date analysed                 | -     |     |         | [NT]  | 11        | 05/07/2019 | 05/07/2019 |                  | [NT] | [NT] |
| Aroclor 1016                  | mg/kg | 0.1 | Org-006 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Aroclor 1221                  | mg/kg | 0.1 | Org-006 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Aroclor 1232                  | mg/kg | 0.1 | Org-006 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Aroclor 1242                  | mg/kg | 0.1 | Org-006 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Aroclor 1248                  | mg/kg | 0.1 | Org-006 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Aroclor 1254                  | mg/kg | 0.1 | Org-006 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Aroclor 1260                  | mg/kg | 0.1 | Org-006 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Surrogate TCLMX               | %     |     | Org-006 | [NT]  | 11        | 86         | 88         | 2                | [NT] | [NT] |

| QUALITY CONTROL: Acid Extractable metals in soil |       |     |            |            | Duplicate |            |            | Spike Recovery % |            |            |
|--------------------------------------------------|-------|-----|------------|------------|-----------|------------|------------|------------------|------------|------------|
| Test Description                                 | Units | PQL | Method     | Blank      | #         | Base       | Dup.       | RPD              | LCS-2      | 220893-2   |
| Date prepared                                    | -     |     |            | 04/07/2019 | 1         | 04/07/2019 | 04/07/2019 |                  | 04/07/2019 | 04/07/2019 |
| Date analysed                                    | -     |     |            | 05/07/2019 | 1         | 05/07/2019 | 05/07/2019 |                  | 05/07/2019 | 05/07/2019 |
| Arsenic                                          | mg/kg | 4   | Metals-020 | <4         | 1         | <4         | 4          | 0                | 111        | 89         |
| Cadmium                                          | mg/kg | 0.4 | Metals-020 | <0.4       | 1         | <0.4       | <0.4       | 0                | 108        | 93         |
| Chromium                                         | mg/kg | 1   | Metals-020 | <1         | 1         | 17         | 19         | 11               | 114        | 95         |
| Copper                                           | mg/kg | 1   | Metals-020 | <1         | 1         | 9          | 9          | 0                | 109        | 101        |
| Lead                                             | mg/kg | 1   | Metals-020 | <1         | 1         | 13         | 14         | 7                | 109        | 90         |
| Mercury                                          | mg/kg | 0.1 | Metals-021 | <0.1       | 1         | 0.2        | <0.1       | 67               | 105        | 103        |
| Nickel                                           | mg/kg | 1   | Metals-020 | <1         | 1         | 10         | 10         | 0                | 106        | 90         |
| Zinc                                             | mg/kg | 1   | Metals-020 | <1         | 1         | 26         | 22         | 17               | 109        | 93         |
| Iron                                             | mg/kg | 1   | Metals-020 | <1         | 1         | 18000      | 19000      | 5                | 105        | #          |
| Aluminium                                        | mg/kg | 1   | Metals-020 | <1         | 1         | 9800       | 9900       | 1                | 117        | #          |
| Selenium                                         | mg/kg | 2   | Metals-020 | <2         | 1         | <2         | <2         | 0                | 103        | 92         |
| Manganese                                        | mg/kg | 1   | Metals-020 | <1         | 1         | 430        | 570        | 28               | 129        | #          |

| QUALITY CONTROL: Acid Extractable metals in soil |       |     |            |       | Duplicate |            |            | Spike Recovery % |      |      |
|--------------------------------------------------|-------|-----|------------|-------|-----------|------------|------------|------------------|------|------|
| Test Description                                 | Units | PQL | Method     | Blank | #         | Base       | Dup.       | RPD              | [NT] | [NT] |
| Date prepared                                    | -     |     |            | [NT]  | 11        | 04/07/2019 | 04/07/2019 |                  | [NT] | [NT] |
| Date analysed                                    | -     |     |            | [NT]  | 11        | 05/07/2019 | 05/07/2019 |                  | [NT] | [NT] |
| Arsenic                                          | mg/kg | 4   | Metals-020 | [NT]  | 11        | <4         | <4         | 0                | [NT] | [NT] |
| Cadmium                                          | mg/kg | 0.4 | Metals-020 | [NT]  | 11        | <0.4       | <0.4       | 0                | [NT] | [NT] |
| Chromium                                         | mg/kg | 1   | Metals-020 | [NT]  | 11        | 20         | 15         | 29               | [NT] | [NT] |
| Copper                                           | mg/kg | 1   | Metals-020 | [NT]  | 11        | 11         | 8          | 32               | [NT] | [NT] |
| Lead                                             | mg/kg | 1   | Metals-020 | [NT]  | 11        | 8          | 8          | 0                | [NT] | [NT] |
| Mercury                                          | mg/kg | 0.1 | Metals-021 | [NT]  | 11        | <0.1       | <0.1       | 0                | [NT] | [NT] |
| Nickel                                           | mg/kg | 1   | Metals-020 | [NT]  | 11        | 14         | 13         | 7                | [NT] | [NT] |
| Zinc                                             | mg/kg | 1   | Metals-020 | [NT]  | 11        | 20         | 15         | 29               | [NT] | [NT] |
| Iron                                             | mg/kg | 1   | Metals-020 | [NT]  | 11        | 25000      | 17000      | 38               | [NT] | [NT] |
| Aluminium                                        | mg/kg | 1   | Metals-020 | [NT]  | 11        | 19000      | 11000      | 53               | [NT] | [NT] |
| Selenium                                         | mg/kg | 2   | Metals-020 | [NT]  | 11        | <2         | <2         | 0                | [NT] | [NT] |
| Manganese                                        | mg/kg | 1   | Metals-020 | [NT]  | 11        | 220        | 220        | 0                | [NT] | [NT] |

## Result Definitions

|             |                                           |
|-------------|-------------------------------------------|
| <b>NT</b>   | Not tested                                |
| <b>NA</b>   | Test not required                         |
| <b>INS</b>  | Insufficient sample for this test         |
| <b>PQL</b>  | Practical Quantitation Limit              |
| <b>&lt;</b> | Less than                                 |
| <b>&gt;</b> | Greater than                              |
| <b>RPD</b>  | Relative Percent Difference               |
| <b>LCS</b>  | Laboratory Control Sample                 |
| <b>NS</b>   | Not specified                             |
| <b>NEPM</b> | National Environmental Protection Measure |
| <b>NR</b>   | Not Reported                              |

## Quality Control Definitions

|                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Blank</b>                                                                                                                                                                                                                                               | This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.           |
| <b>Duplicate</b>                                                                                                                                                                                                                                           | This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.                                                 |
| <b>Matrix Spike</b>                                                                                                                                                                                                                                        | A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist. |
| <b>LCS (Laboratory Control Sample)</b>                                                                                                                                                                                                                     | This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.                                |
| <b>Surrogate Spike</b>                                                                                                                                                                                                                                     | Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.                          |
| Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011. |                                                                                                                                                                                                                                  |

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

## Report Comments

Samples received in good order: No  
Samples 112/0.3 and D2 received broken unable to salvage for analysis

8 metals in soil - # Percent recovery is not possible to report due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 220893-11 for Al. Therefore a triplicate result has been issued as laboratory sample number 220893-20.

TRH Soil C10-C40 NEPM - # Percent recovery for the surrogate is not possible to report as the high concentration of analytes in sample 220893-6 has caused interference.

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.

Note: Sample 220893-13 was sub-sampled from a jar provided by the client.

PAHs in Soil - The PQL for sample 220893- 6 has been raised due to the high concentration of analytes in the sample, resulting in the sample requiring a dilution.

OC's, OP and PCB in Soil - The PQL has been raised due to interferences from analytes (other than those being tested) in sample 220893-6.



## **CERTIFICATE OF ANALYSIS 221419**

### **Client Details**

|                  |                                                         |
|------------------|---------------------------------------------------------|
| <b>Client</b>    | Douglas Partners Newcastle                              |
| <b>Attention</b> | Chris Bozinovski                                        |
| <b>Address</b>   | Box 324 Hunter Region Mail Centre, Newcastle, NSW, 2310 |

### **Sample Details**

|                                             |                                   |
|---------------------------------------------|-----------------------------------|
| <b>Your Reference</b>                       | <b><u>91601, Muswellbrook</u></b> |
| <b>Number of Samples</b>                    | 3 water                           |
| <b>Date samples received</b>                | 11/07/2019                        |
| <b>Date completed instructions received</b> | 11/07/2019                        |

### **Analysis Details**

Please refer to the following pages for results, methodology summary and quality control data.  
Samples were analysed as received from the client. Results relate specifically to the samples as received.  
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

### **Report Details**

|                                                                                                             |            |
|-------------------------------------------------------------------------------------------------------------|------------|
| <b>Date results requested by</b>                                                                            | 18/07/2019 |
| <b>Date of Issue</b>                                                                                        | 17/07/2019 |
| NATA Accreditation Number 2901. This document shall not be reproduced except in full.                       |            |
| Accredited for compliance with ISO/IEC 17025 - Testing. <b>Tests not covered by NATA are denoted with *</b> |            |

#### **Results Approved By**

Loren Bardwell, Senior Chemist  
Steven Luong, Organics Supervisor

#### **Authorised By**



Nancy Zhang, Laboratory Manager

| vTRH(C6-C10)/BTEXN in Water                         |       |            |            |            |
|-----------------------------------------------------|-------|------------|------------|------------|
| Our Reference                                       |       | 221419-1   | 221419-2   | 221419-3   |
| Your Reference                                      | UNITS | 201        | 202        | D1         |
| Date Sampled                                        |       | 08/07/2019 | 08/07/2019 | 08/07/2019 |
| Type of sample                                      |       | water      | water      | water      |
| Date extracted                                      | -     | 12/07/2019 | 12/07/2019 | 12/07/2019 |
| Date analysed                                       | -     | 13/07/2019 | 13/07/2019 | 13/07/2019 |
| TRH C <sub>6</sub> - C <sub>9</sub>                 | µg/L  | <10        | <10        | <10        |
| TRH C <sub>6</sub> - C <sub>10</sub>                | µg/L  | <10        | <10        | <10        |
| TRH C <sub>6</sub> - C <sub>10</sub> less BTEX (F1) | µg/L  | <10        | <10        | <10        |
| Benzene                                             | µg/L  | <1         | <1         | <1         |
| Toluene                                             | µg/L  | <1         | <1         | <1         |
| Ethylbenzene                                        | µg/L  | <1         | <1         | <1         |
| m+p-xylene                                          | µg/L  | <2         | <2         | <2         |
| o-xylene                                            | µg/L  | 1          | <1         | <1         |
| Naphthalene                                         | µg/L  | <1         | <1         | <1         |
| Surrogate Dibromofluoromethane                      | %     | 132        | 132        | 132        |
| Surrogate toluene-d8                                | %     | 95         | 94         | 94         |
| Surrogate 4-BFB                                     | %     | 75         | 73         | 74         |

| svTRH (C10-C40) in Water                                     |       |            |            |            |
|--------------------------------------------------------------|-------|------------|------------|------------|
| Our Reference                                                |       | 221419-1   | 221419-2   | 221419-3   |
| Your Reference                                               | UNITS | 201        | 202        | D1         |
| Date Sampled                                                 |       | 08/07/2019 | 08/07/2019 | 08/07/2019 |
| Type of sample                                               |       | water      | water      | water      |
| Date extracted                                               | -     | 15/07/2019 | 15/07/2019 | 15/07/2019 |
| Date analysed                                                | -     | 16/07/2019 | 16/07/2019 | 16/07/2019 |
| TRH C <sub>10</sub> - C <sub>14</sub>                        | µg/L  | <50        | <50        | <50        |
| TRH C <sub>15</sub> - C <sub>28</sub>                        | µg/L  | <100       | <100       | <100       |
| TRH C <sub>29</sub> - C <sub>36</sub>                        | µg/L  | <100       | <100       | <100       |
| TRH >C <sub>10</sub> - C <sub>16</sub>                       | µg/L  | <50        | <50        | <50        |
| TRH >C <sub>10</sub> - C <sub>16</sub> less Naphthalene (F2) | µg/L  | <50        | <50        | <50        |
| TRH >C <sub>16</sub> - C <sub>34</sub>                       | µg/L  | <100       | <100       | <100       |
| TRH >C <sub>34</sub> - C <sub>40</sub>                       | µg/L  | <100       | <100       | <100       |
| Surrogate o-Terphenyl                                        | %     | 102        | 107        | 104        |

| PAHs in Water - Low Level         |       |            |            |            |
|-----------------------------------|-------|------------|------------|------------|
| Our Reference                     |       | 221419-1   | 221419-2   | 221419-3   |
| Your Reference                    | UNITS | 201        | 202        | D1         |
| Date Sampled                      |       | 08/07/2019 | 08/07/2019 | 08/07/2019 |
| Type of sample                    |       | water      | water      | water      |
| Date extracted                    | -     | 15/07/2019 | 15/07/2019 | 15/07/2019 |
| Date analysed                     | -     | 16/07/2019 | 16/07/2019 | 16/07/2019 |
| Naphthalene                       | µg/L  | <0.2       | <0.2       | <0.2       |
| Acenaphthylene                    | µg/L  | <0.1       | <0.1       | <0.1       |
| Acenaphthene                      | µg/L  | <0.1       | <0.1       | <0.1       |
| Fluorene                          | µg/L  | <0.1       | <0.1       | <0.1       |
| Phenanthrene                      | µg/L  | <0.1       | <0.1       | <0.1       |
| Anthracene                        | µg/L  | <0.1       | <0.1       | <0.1       |
| Fluoranthene                      | µg/L  | <0.1       | <0.1       | <0.1       |
| Pyrene                            | µg/L  | <0.1       | <0.1       | <0.1       |
| Benzo(a)anthracene                | µg/L  | <0.1       | <0.1       | <0.1       |
| Chrysene                          | µg/L  | <0.1       | <0.1       | <0.1       |
| Benzo(b,j+k)fluoranthene          | µg/L  | <0.2       | <0.2       | <0.2       |
| Benzo(a)pyrene                    | µg/L  | <0.1       | <0.1       | <0.1       |
| Indeno(1,2,3-c,d)pyrene           | µg/L  | <0.1       | <0.1       | <0.1       |
| Dibenzo(a,h)anthracene            | µg/L  | <0.1       | <0.1       | <0.1       |
| Benzo(g,h,i)perylene              | µg/L  | <0.1       | <0.1       | <0.1       |
| Benzo(a)pyrene TEQ                | µg/L  | <0.5       | <0.5       | <0.5       |
| Total +ve PAH's                   | µg/L  | NIL (+)VE  | NIL (+)VE  | NIL (+)VE  |
| Surrogate <i>p</i> -Terphenyl-d14 | %     | 113        | 106        | 99         |

| HM in water - dissolved |       |            |            |            |
|-------------------------|-------|------------|------------|------------|
| Our Reference           |       | 221419-1   | 221419-2   | 221419-3   |
| Your Reference          | UNITS | 201        | 202        | D1         |
| Date Sampled            |       | 08/07/2019 | 08/07/2019 | 08/07/2019 |
| Type of sample          |       | water      | water      | water      |
| Date prepared           | -     | 12/07/2019 | 12/07/2019 | 12/07/2019 |
| Date analysed           | -     | 12/07/2019 | 12/07/2019 | 12/07/2019 |
| Lead-Dissolved          | µg/L  | <1         | <1         | <1         |

| Method ID         | Methodology Summary                                                                                                                                                                                                                                                                                  |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Metals-022</b> | Determination of various metals by ICP-MS.                                                                                                                                                                                                                                                           |
| <b>Org-003</b>    | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. |
| <b>Org-012</b>    | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.                                                                                  |
| <b>Org-013</b>    | Water samples are analysed directly by purge and trap GC-MS.                                                                                                                                                                                                                                         |
| <b>Org-016</b>    | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.                                 |

| QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water |       |     |         |            | Duplicate |            |            | Spike Recovery % |            |      |
|----------------------------------------------|-------|-----|---------|------------|-----------|------------|------------|------------------|------------|------|
| Test Description                             | Units | PQL | Method  | Blank      | #         | Base       | Dup.       | RPD              | LCS-W5     | [NT] |
| Date extracted                               | -     |     |         | 12/07/2019 | 1         | 12/07/2019 | 16/07/2019 |                  | 12/07/2019 | [NT] |
| Date analysed                                | -     |     |         | 13/07/2019 | 1         | 13/07/2019 | 17/07/2019 |                  | 13/07/2019 | [NT] |
| TRH C <sub>6</sub> - C <sub>9</sub>          | µg/L  | 10  | Org-016 | <10        | 1         | <10        | <10        | 0                | 96         | [NT] |
| TRH C <sub>6</sub> - C <sub>10</sub>         | µg/L  | 10  | Org-016 | <10        | 1         | <10        | <10        | 0                | 96         | [NT] |
| Benzene                                      | µg/L  | 1   | Org-016 | <1         | 1         | <1         | <1         | 0                | 112        | [NT] |
| Toluene                                      | µg/L  | 1   | Org-016 | <1         | 1         | <1         | <1         | 0                | 98         | [NT] |
| Ethylbenzene                                 | µg/L  | 1   | Org-016 | <1         | 1         | <1         | <1         | 0                | 85         | [NT] |
| m+p-xylene                                   | µg/L  | 2   | Org-016 | <2         | 1         | <2         | <2         | 0                | 92         | [NT] |
| o-xylene                                     | µg/L  | 1   | Org-016 | <1         | 1         | 1          | 1          | 0                | 97         | [NT] |
| Naphthalene                                  | µg/L  | 1   | Org-013 | <1         | 1         | <1         | <1         | 0                | [NT]       | [NT] |
| Surrogate Dibromofluoromethane               | %     |     | Org-016 | 119        | 1         | 132        | 123        | 7                | 106        | [NT] |
| Surrogate toluene-d8                         | %     |     | Org-016 | 96         | 1         | 95         | 95         | 0                | 96         | [NT] |
| Surrogate 4-BFB                              | %     |     | Org-016 | 73         | 1         | 75         | 78         | 4                | 102        | [NT] |

| QUALITY CONTROL: svTRH (C10-C40) in Water |       |     |         |            | Duplicate |      |      | Spike Recovery % |            |      |
|-------------------------------------------|-------|-----|---------|------------|-----------|------|------|------------------|------------|------|
| Test Description                          | Units | PQL | Method  | Blank      | #         | Base | Dup. | RPD              | LCS-W4     | [NT] |
| Date extracted                            | -     |     |         | 15/07/2019 | [NT]      | [NT] | [NT] | [NT]             | 15/07/2019 | [NT] |
| Date analysed                             | -     |     |         | 16/07/2019 | [NT]      | [NT] | [NT] | [NT]             | 16/07/2019 | [NT] |
| TRH C <sub>10</sub> - C <sub>14</sub>     | µg/L  | 50  | Org-003 | <50        | [NT]      | [NT] | [NT] | [NT]             | 74         | [NT] |
| TRH C <sub>15</sub> - C <sub>28</sub>     | µg/L  | 100 | Org-003 | <100       | [NT]      | [NT] | [NT] | [NT]             | 70         | [NT] |
| TRH C <sub>29</sub> - C <sub>36</sub>     | µg/L  | 100 | Org-003 | <100       | [NT]      | [NT] | [NT] | [NT]             | 89         | [NT] |
| TRH >C <sub>10</sub> - C <sub>16</sub>    | µg/L  | 50  | Org-003 | <50        | [NT]      | [NT] | [NT] | [NT]             | 74         | [NT] |
| TRH >C <sub>16</sub> - C <sub>34</sub>    | µg/L  | 100 | Org-003 | <100       | [NT]      | [NT] | [NT] | [NT]             | 70         | [NT] |
| TRH >C <sub>34</sub> - C <sub>40</sub>    | µg/L  | 100 | Org-003 | <100       | [NT]      | [NT] | [NT] | [NT]             | 89         | [NT] |
| Surrogate o-Terphenyl                     | %     |     | Org-003 | 91         | [NT]      | [NT] | [NT] | [NT]             | 79         | [NT] |



| QUALITY CONTROL: PAHs in Water - Low Level |       |     |         |            | Duplicate |      |      | Spike Recovery % |            |      |
|--------------------------------------------|-------|-----|---------|------------|-----------|------|------|------------------|------------|------|
| Test Description                           | Units | PQL | Method  | Blank      | #         | Base | Dup. | RPD              | LCS-W1     | [NT] |
| Date extracted                             | -     |     |         | 15/07/2019 | [NT]      | [NT] | [NT] | [NT]             | 15/07/2019 | [NT] |
| Date analysed                              | -     |     |         | 16/07/2019 | [NT]      | [NT] | [NT] | [NT]             | 16/07/2019 | [NT] |
| Naphthalene                                | µg/L  | 0.2 | Org-012 | <0.2       | [NT]      | [NT] | [NT] | [NT]             | 92         | [NT] |
| Acenaphthylene                             | µg/L  | 0.1 | Org-012 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Acenaphthene                               | µg/L  | 0.1 | Org-012 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Fluorene                                   | µg/L  | 0.1 | Org-012 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | 80         | [NT] |
| Phenanthrene                               | µg/L  | 0.1 | Org-012 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | 68         | [NT] |
| Anthracene                                 | µg/L  | 0.1 | Org-012 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Fluoranthene                               | µg/L  | 0.1 | Org-012 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | 72         | [NT] |
| Pyrene                                     | µg/L  | 0.1 | Org-012 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | 72         | [NT] |
| Benzo(a)anthracene                         | µg/L  | 0.1 | Org-012 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Chrysene                                   | µg/L  | 0.1 | Org-012 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | 68         | [NT] |
| Benzo(b,j+k)fluoranthene                   | µg/L  | 0.2 | Org-012 | <0.2       | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Benzo(a)pyrene                             | µg/L  | 0.1 | Org-012 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | 70         | [NT] |
| Indeno(1,2,3-c,d)pyrene                    | µg/L  | 0.1 | Org-012 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Dibenzo(a,h)anthracene                     | µg/L  | 0.1 | Org-012 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Benzo(g,h,i)perylene                       | µg/L  | 0.1 | Org-012 | <0.1       | [NT]      | [NT] | [NT] | [NT]             | [NT]       | [NT] |
| Surrogate p-Terphenyl-d14                  | %     |     | Org-012 | 75         | [NT]      | [NT] | [NT] | [NT]             | 85         | [NT] |

**Client Reference: 91601, Muswellbrook**

| QUALITY CONTROL: HM in water - dissolved |       |     |            |            | Duplicate |            |            | Spike Recovery % |            |      |
|------------------------------------------|-------|-----|------------|------------|-----------|------------|------------|------------------|------------|------|
| Test Description                         | Units | PQL | Method     | Blank      | #         | Base       | Dup.       | RPD              | LCS-W3     | [NT] |
| Date prepared                            | -     |     |            | 12/07/2019 | 1         | 12/07/2019 | 12/07/2019 |                  | 12/07/2019 | [NT] |
| Date analysed                            | -     |     |            | 12/07/2019 | 1         | 12/07/2019 | 12/07/2019 |                  | 12/07/2019 | [NT] |
| Lead-Dissolved                           | µg/L  | 1   | Metals-022 | <1         | 1         | <1         | <1         | 0                | 99         | [NT] |

## Result Definitions

|             |                                           |
|-------------|-------------------------------------------|
| <b>NT</b>   | Not tested                                |
| <b>NA</b>   | Test not required                         |
| <b>INS</b>  | Insufficient sample for this test         |
| <b>PQL</b>  | Practical Quantitation Limit              |
| <b>&lt;</b> | Less than                                 |
| <b>&gt;</b> | Greater than                              |
| <b>RPD</b>  | Relative Percent Difference               |
| <b>LCS</b>  | Laboratory Control Sample                 |
| <b>NS</b>   | Not specified                             |
| <b>NEPM</b> | National Environmental Protection Measure |
| <b>NR</b>   | Not Reported                              |

## Quality Control Definitions

|                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Blank</b>                                                                                                                                                                                                                                               | This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.           |
| <b>Duplicate</b>                                                                                                                                                                                                                                           | This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.                                                 |
| <b>Matrix Spike</b>                                                                                                                                                                                                                                        | A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist. |
| <b>LCS (Laboratory Control Sample)</b>                                                                                                                                                                                                                     | This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.                                |
| <b>Surrogate Spike</b>                                                                                                                                                                                                                                     | Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.                          |
| Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011. |                                                                                                                                                                                                                                  |

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

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## Appendix C

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Chain of Custody Sheets (Field and Despatch)  
Sample Receipt

|                                                                                                                                                                                        |                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <b>Project No:</b> 91601                                                                                                                                                               | <b>Client Project Name:</b> Detailed Site Investigation                |
| <b>Client:</b> Pacific Brook Christian School Ltd                                                                                                                                      | <b>Location:</b> Lot 100 DP 1261496, Maitland Street, Muswellbrook NSW |
| <b>Project Manager:</b> CB                                                                                                                                                             | <b>DP Lab Received</b> By: JPS Date: 2/7/19                            |
| <b>Do samples contain 'potential' HBM?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (If YES, then handle, transport and store in accordance with FPM HAZID) |                                                                        |

| Field     |           |                  |                                  |                                        |             |          |         |      | DP Lab           | For Despatch to     |  |  | Notes |
|-----------|-----------|------------------|----------------------------------|----------------------------------------|-------------|----------|---------|------|------------------|---------------------|--|--|-------|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type<br>S-soil<br>W water | Container Type<br>G-glass<br>P-plastic | ASS Samples | Sampling |         |      | Storage Locn*    | Envirolab<br>2/7/19 |  |  |       |
|           |           |                  |                                  |                                        |             | By       | Date    | Time |                  |                     |  |  |       |
| 101       | 0.2       |                  | S                                | G,P                                    |             | JPS      | 11/7/19 | 8    | Envirolab/Fridge | ✓                   |  |  |       |
|           | 0.6       |                  |                                  |                                        |             |          |         |      |                  |                     |  |  |       |
| 102       | 0.05      |                  |                                  |                                        |             |          |         |      |                  | ✓                   |  |  |       |
|           | 0.3       |                  |                                  |                                        |             |          |         |      |                  |                     |  |  |       |
|           | 0.7       |                  |                                  |                                        |             |          |         |      |                  |                     |  |  |       |
| 103       | 0.05      | D1               |                                  |                                        |             |          |         |      |                  | ✓✓                  |  |  |       |
|           | 0.3       |                  |                                  |                                        |             |          |         |      |                  |                     |  |  |       |
|           | 0.7       |                  |                                  |                                        |             |          |         |      |                  |                     |  |  |       |
| 104       | 0.05      |                  |                                  |                                        |             |          |         |      |                  |                     |  |  |       |
|           | 0.3       |                  |                                  |                                        |             |          |         |      |                  |                     |  |  |       |
|           | 1.0       |                  |                                  |                                        |             |          |         |      |                  | ✓                   |  |  |       |
| 105       | 0.1       |                  |                                  |                                        |             |          |         |      |                  | ✓                   |  |  |       |
|           | 0.5       |                  |                                  |                                        |             |          |         |      |                  |                     |  |  |       |
|           | 1.0       |                  |                                  |                                        |             |          |         |      |                  |                     |  |  |       |
| 106       | 0.26      |                  |                                  |                                        |             |          |         |      |                  | ✓                   |  |  |       |
|           | 0.5       |                  |                                  |                                        |             |          |         |      |                  | ✓                   |  |  |       |
|           | 0.1       |                  |                                  |                                        |             |          |         |      |                  |                     |  |  |       |
|           | 1.2       |                  |                                  |                                        |             |          |         | 5    |                  |                     |  |  |       |

\*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge



|                                                                                                                                                                                 |  |                                                                        |                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------|------------------------------------|
| <b>Project No:</b> 91601                                                                                                                                                        |  | <b>Client Project Name:</b> Detailed Site Investigation                |                                    |
| <b>Client:</b> Pacific Brook Christian School Ltd                                                                                                                               |  | <b>Location:</b> Lot 100 DP 1261496, Maitland Street, Muswellbrook NSW |                                    |
| <b>Project Manager:</b> CB                                                                                                                                                      |  | <b>DP Lab Received</b>                                                 | By: <i>SPS</i> Date: <i>2/7/11</i> |
| Do samples contain 'potential' HBM? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (If YES, then handle, transport and store in accordance with FPM HAZID) |  |                                                                        |                                    |

| Sample ID | Depth (m) | Duplicate Sample | Field                            |                                        |             | Sampling |        |      | DP Lab Storage Locn* | For Despatch to                   |  |  | Notes |
|-----------|-----------|------------------|----------------------------------|----------------------------------------|-------------|----------|--------|------|----------------------|-----------------------------------|--|--|-------|
|           |           |                  | Sample Type<br>S-soil<br>W water | Container Type<br>G-glass<br>P-plastic | ASS Samples | By       | Date   | Time |                      | <i>Envirolab</i><br><i>2/7/11</i> |  |  |       |
| 107       | 0.1       |                  | S                                | G, P                                   |             | SPS      | 1/7/11 | 8    | <i>Eshy/fridge</i>   | ✓                                 |  |  |       |
|           | 0.22      | 12               |                                  |                                        |             |          |        |      |                      | ✓                                 |  |  |       |
|           | 0.6       |                  |                                  |                                        |             |          |        |      |                      |                                   |  |  |       |
| SP1       | -         |                  |                                  |                                        |             |          |        |      |                      |                                   |  |  |       |
| 108       | 0.3       |                  |                                  |                                        |             |          |        |      |                      | ✓                                 |  |  |       |
|           | 0.8       |                  |                                  |                                        |             |          |        |      |                      |                                   |  |  |       |
| 109       | 0.3       |                  |                                  |                                        |             |          |        |      |                      |                                   |  |  |       |
|           | 1.0       |                  |                                  |                                        |             |          |        |      |                      | ✓                                 |  |  |       |
|           | 1.4       |                  |                                  |                                        |             |          |        |      |                      |                                   |  |  |       |
| 110       | 0.1       |                  |                                  |                                        |             |          |        |      |                      | ✓                                 |  |  |       |
|           | 0.4       |                  |                                  |                                        |             |          |        |      |                      |                                   |  |  |       |
| 111       | 0-0.1     |                  |                                  |                                        |             |          |        |      |                      | ✓                                 |  |  |       |
| 111/F     | surface   |                  | metal                            | P                                      |             |          |        |      |                      | ✓                                 |  |  |       |
| 112       | 0.05      |                  |                                  | G, P                                   |             |          |        |      |                      |                                   |  |  |       |
|           | 0.3       |                  |                                  |                                        |             |          |        |      |                      | ✓                                 |  |  |       |
|           | 0.7       |                  |                                  |                                        |             |          |        |      |                      |                                   |  |  |       |
| 113       | 0.05      |                  |                                  |                                        |             |          |        |      |                      | ✓                                 |  |  |       |
|           | 0.4       |                  |                                  |                                        |             |          |        | 5    |                      |                                   |  |  |       |

\*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

|                                                                                                                                                                             |  |                                                                        |                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------|----------------------|
| <b>Project No:</b> 91601                                                                                                                                                    |  | <b>Client Project Name:</b> Detailed Site Investigation                |                      |
| <b>Client:</b> Pacific Brook Christian School Ltd                                                                                                                           |  | <b>Location:</b> Lot 100 DP 1261496, Maitland Street, Muswellbrook NSW |                      |
| <b>Project Manager:</b> CB                                                                                                                                                  |  | <b>DP Lab Received</b>                                                 | By: JPS Date: 2/7/19 |
| <b>Do samples contain 'potential' HBM?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> (If YES, then handle, transport and store in accordance with FPM HAZID) |  |                                                                        |                      |

| Field     |           |                  |                                  |                                        |             |          |         |      | DP Lab              | For Despatch to    |  |    | Notes |  |
|-----------|-----------|------------------|----------------------------------|----------------------------------------|-------------|----------|---------|------|---------------------|--------------------|--|----|-------|--|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type<br>S-soil<br>W water | Container Type<br>G-glass<br>P-plastic | ASS Samples | Sampling |         |      | Storage Locn*       | Envidlab<br>2/7/19 |  |    |       |  |
|           |           |                  |                                  |                                        |             | By       | Date    | Time |                     |                    |  |    |       |  |
| 114       | 0.05      |                  | S                                | G.P                                    |             | JPS      | 11/7/19 | 8    | Envidlab / Envidlab | ✓                  |  |    |       |  |
|           | 0.3       |                  | ↓                                | ↓                                      |             | ↓        | ↓       | ↓    | ↓                   |                    |  |    |       |  |
| 115       | 0.05      |                  | ↓                                | ↓                                      |             | ↓        | ↓       | ↓    | ↓                   |                    |  |    |       |  |
|           | 0.3       |                  | ↓                                | ↓                                      |             | ↓        | ↓       | ↓    | ↓                   | ✓                  |  |    |       |  |
| 116       | 0.05      |                  | ↓                                | ↓                                      |             | ↓        | ↓       | ↓    | ↓                   | ✓                  |  |    |       |  |
|           | 0.3       |                  | ↓                                | ↓                                      |             | ↓        | ↓       | ↓    | ↓                   |                    |  |    |       |  |
| 201       | -         |                  | W                                | G.P                                    |             | JCL      | 8/7/19  | 1:00 | Envidlab            | Envidlab / 10/7/19 |  |    |       |  |
| 202       | -         |                  | W                                | G.P                                    |             | JCL      | 8/7/19  | 4:00 | "                   | 10/7/19            |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  |    |       |  |
|           |           |                  |                                  |                                        |             |          |         |      |                     |                    |  | </ |       |  |

\*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge



|                                                                                                                                                                                        |  |                                                                        |                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------|-----------------------|
| <b>Project No:</b> 91601                                                                                                                                                               |  | <b>Client Project Name:</b> Detailed Site Investigation                |                       |
| <b>Client:</b> Pacific Brook Christian School Ltd                                                                                                                                      |  | <b>Location:</b> Lot 100 DP 1261496, Maitland Street, Muswellbrook NSW |                       |
| <b>Project Manager:</b> CB                                                                                                                                                             |  | <b>DP Lab Received</b>                                                 | By: _____ Date: _____ |
| <b>Do samples contain 'potential' HBM?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If YES, then handle, transport and store in accordance with FPM HAZID) |  |                                                                        |                       |

| Field     |           |                  |                                  |                                        |             |          |        |      | DP Lab        | For Despatch to |  |  | Notes |  |
|-----------|-----------|------------------|----------------------------------|----------------------------------------|-------------|----------|--------|------|---------------|-----------------|--|--|-------|--|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type<br>S-soil<br>W water | Container Type<br>G-glass<br>P-plastic | ASS Samples | Sampling |        |      | Storage Locn* |                 |  |  |       |  |
|           |           |                  |                                  |                                        |             | By       | Date   | Time |               |                 |  |  |       |  |
| 201/0.2   | 0.2       |                  | S                                | G, P                                   |             | XL       | 1/7/19 | 0800 | BAY 2         |                 |  |  |       |  |
| 201/0.5   | 0.5       |                  | ↓                                | ↓                                      |             | ↓        | ↓      | ↓    | ↓             |                 |  |  |       |  |
| 201/1.0   | 1.0       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |  |
| 201/1.5   | 1.5       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |  |
| 201/2.0   | 2.0       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |  |
| 201/2.5   | 2.5       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |  |
| 201/3.0   | 3.0       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |  |
| 201/3.5   | 3.5       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |  |
| 201/4.0   | 4.0       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |  |
| 201/4.5   | 4.5       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |  |
| 201/5.0   | 5.0       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |  |
| 201/5.5   | 5.5       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |  |
| 201/6.0   | 6.0       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |  |
| 201/6.5   | 6.5       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |  |
| 201/7.0   | 7.0       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |  |
| 202/0.2   | 0.2       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |  |
| 202/0.5   | 0.5       |                  |                                  |                                        |             |          |        | ↓    |               |                 |  |  |       |  |
| 202/1.0   | 1.0       |                  | ↓                                | ↓                                      |             | ↓        | ↓      | 1300 | ↓             |                 |  |  |       |  |

\*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

|                                                                                                                                                                                        |  |                                                                        |                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------|-----------------------|
| <b>Project No:</b> 91601                                                                                                                                                               |  | <b>Client Project Name:</b> Detailed Site Investigation                |                       |
| <b>Client:</b> Pacific Brook Christian School Ltd                                                                                                                                      |  | <b>Location:</b> Lot 100 DP 1261496, Maitland Street, Muswellbrook NSW |                       |
| <b>Project Manager:</b> CB                                                                                                                                                             |  | <b>DP Lab Received</b>                                                 | By: _____ Date: _____ |
| <b>Do samples contain 'potential' HBM?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If YES, then handle, transport and store in accordance with FPM HAZID) |  |                                                                        |                       |

| Field     |           |                  |                                  |                                        |             |          |        |      | DP Lab        | For Despatch to |  |  | Notes |
|-----------|-----------|------------------|----------------------------------|----------------------------------------|-------------|----------|--------|------|---------------|-----------------|--|--|-------|
| Sample ID | Depth (m) | Duplicate Sample | Sample Type<br>S-soil<br>W water | Container Type<br>G-glass<br>P-plastic | ASS Samples | Sampling |        |      | Storage Locn* |                 |  |  |       |
|           |           |                  |                                  |                                        |             | By       | Date   | Time |               |                 |  |  |       |
| 202/1-5   | 1-5       |                  | S                                | GIP                                    |             | JLL      | 1/7/19 | 0800 | BAY 2         |                 |  |  |       |
| 202/2-0   | 2-0       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |
| 202/2-5   | 2-5       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |
| 202/3-0   | 3-0       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |
| 202/3-5   | 3-5       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |
| 202/4-0   | 4-0       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |
| 202/4-5   | 4-5       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |
| 202/5-0   | 5-0       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |
| 202/5-5   | 5-5       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |
| 202/6-0   | 6-0       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |
| 202/6-5   | 6-5       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |
| 202/7-0   | 7-0       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |
| 202/7-5   | 7-5       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |
| 202/8-0   | 8-0       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |
| 202/8-5   | 8-5       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |
| 202/9-0   | 9-0       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |
| 202/9-5   | 9-5       |                  |                                  |                                        |             |          |        |      |               |                 |  |  |       |
| 202/10-0  | 10-0      |                  |                                  |                                        |             |          |        | 1300 |               |                 |  |  |       |

\*Default storage: glass containers in fridge, plastic containers shelved, ASS in freezer, water samples in fridge

pg 1 of 3

**CHAIN OF CUSTODY DESPATCH SHEET (2)**

|                                                                                                                                                                                        |                                                              |                                             |                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------|----------------------------|
| <b>Project No:</b> 91601                                                                                                                                                               | <b>Suburb/Town:</b> Muswellbrook                             | <b>To:</b> Envirolab Services Pty Ltd       |                            |
| <b>DP Order No:</b>                                                                                                                                                                    | <b>DP Contact Person:</b> Paulo Sebastian / Chris Bozinovski | <b>12 Ashley Street, CHATSWOOD NSW 2067</b> |                            |
| <b>Prior Storage:</b> Esky <input checked="" type="checkbox"/> Fridge <input type="checkbox"/> Shelved <input type="checkbox"/>                                                        |                                                              | <b>Ph:</b> (02) 9910 6200                   | <b>Attn:</b> Jacinta Hurst |
| <b>Do samples contain 'potential' HBM?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (If YES, then handle, transport and store in accordance with FPM HAZID) |                                                              |                                             |                            |

| Sample                                                                                                                                                                               |              |                     |        | Analytes                                                                                                                                                                                               |     |             |                 |               |  |  |  | Notes                                                                                                                                                                                                                                                             |         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------|-----------------|---------------|--|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| DP ID                                                                                                                                                                                | Date Sampled | Type S-soil W-water | Lab ID | TRH / BTEX                                                                                                                                                                                             | PAH | Metals (12) | OPP / OCP / PCB | Asbestos I.D. |  |  |  |                                                                                                                                                                                                                                                                   |         |
| 101/0.2                                                                                                                                                                              | 11/7/19      | S                   | 1      | ✓                                                                                                                                                                                                      | ✓   | ✓           | ✓               |               |  |  |  |                                                                                                                                                                                                                                                                   | Combo 6 |
| 102/0.05                                                                                                                                                                             | ↓            | ↓                   | 2      | ↓                                                                                                                                                                                                      | ↓   | ↓           | ↓               |               |  |  |  |                                                                                                                                                                                                                                                                   |         |
| 103/0.05                                                                                                                                                                             | ↓            | ↓                   | 3      | ↓                                                                                                                                                                                                      | ↓   | ↓           | ↓               |               |  |  |  |                                                                                                                                                                                                                                                                   |         |
| 104/1.0                                                                                                                                                                              | ↓            | ↓                   | 4      | ↓                                                                                                                                                                                                      | ↓   | ↓           | ↓               |               |  |  |  |                                                                                                                                                                                                                                                                   |         |
| 105/0.1                                                                                                                                                                              | ↓            | ↓                   | 5      | ↓                                                                                                                                                                                                      | ↓   | ↓           | ↓               |               |  |  |  |                                                                                                                                                                                                                                                                   |         |
| 106/0.26                                                                                                                                                                             | ↓            | ↓                   | 6      | ↓                                                                                                                                                                                                      | ↓   | ↓           | ↓               |               |  |  |  |                                                                                                                                                                                                                                                                   |         |
| 106/0.5                                                                                                                                                                              | ↓            | ↓                   | 7      | ↓                                                                                                                                                                                                      | ↓   | ↓           | ↓               |               |  |  |  |                                                                                                                                                                                                                                                                   |         |
| 107/0.1                                                                                                                                                                              | ↓            | ↓                   | 8      | ↓                                                                                                                                                                                                      | ↓   | ↓           | ↓               |               |  |  |  |                                                                                                                                                                                                                                                                   |         |
| 107/0.22                                                                                                                                                                             | ↓            | ↓                   | 9      | ↓                                                                                                                                                                                                      | ↓   | ↓           | ↓               |               |  |  |  |                                                                                                                                                                                                                                                                   |         |
| 108/0.3                                                                                                                                                                              | ↓            | ↓                   | 10     | ↓                                                                                                                                                                                                      | ↓   | ↓           | ↓               |               |  |  |  |                                                                                                                                                                                                                                                                   |         |
| PQL (S) mg/kg                                                                                                                                                                        |              |                     |        |                                                                                                                                                                                                        |     |             |                 |               |  |  |  |                                                                                                                                                                                                                                                                   |         |
| PQL (W) mg/L                                                                                                                                                                         |              |                     |        | ANZECC PQLs req'd for all water analytes <input type="checkbox"/>                                                                                                                                      |     |             |                 |               |  |  |  |                                                                                                                                                                                                                                                                   |         |
| PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit                                                                                      |              |                     |        | <b>SAMPLES RECEIVED BY LAB</b><br>Please sign and date to acknowledge receipt of samples and return by email<br><br>Signature: <u>[Signature]</u><br>Date: <u>07/03/2019</u><br>Lab Ref: <u>220893</u> |     |             |                 |               |  |  |  | Send results to:<br>Douglas Partners Pty Ltd<br>Email: <a href="mailto:paulo.sebastian@douglaspartners.com.au">paulo.sebastian@douglaspartners.com.au</a><br><a href="mailto:chris.bozinovski@douglaspartners.com.au">chris.bozinovski@douglaspartners.com.au</a> |         |
| *Metals to Analyse (Please circle) As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn, Fe, Al, Se                                                                                                    |              |                     |        |                                                                                                                                                                                                        |     |             |                 |               |  |  |  |                                                                                                                                                                                                                                                                   |         |
| Total number of samples in container: <u>21</u>                                                                                                                                      |              |                     |        |                                                                                                                                                                                                        |     |             |                 |               |  |  |  |                                                                                                                                                                                                                                                                   |         |
| Date relinquished: <u>21/7/19</u> By: <u>JPS</u>                                                                                                                                     |              |                     |        |                                                                                                                                                                                                        |     |             |                 |               |  |  |  |                                                                                                                                                                                                                                                                   |         |
| Results required by: .....                                                                                                                                                           |              |                     |        |                                                                                                                                                                                                        |     |             |                 |               |  |  |  |                                                                                                                                                                                                                                                                   |         |
| <input type="checkbox"/> Same day <input type="checkbox"/> 24 hours <input type="checkbox"/> 48 hours <input type="checkbox"/> 72 hours <input checked="" type="checkbox"/> Standard |              |                     |        |                                                                                                                                                                                                        |     |             |                 |               |  |  |  |                                                                                                                                                                                                                                                                   |         |

2 of 3

**CHAIN OF CUSTODY DESPATCH SHEET (2)**

|                                                                                                                                                                                        |  |                                                              |  |                                             |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------|--|---------------------------------------------|--|
| <b>Project No:</b> 91601                                                                                                                                                               |  | <b>Suburb/Town:</b> Muswellbrook                             |  | <b>To:</b> Envirolab Services Pty Ltd       |  |
| <b>DP Order No:</b>                                                                                                                                                                    |  | <b>DP Contact Person:</b> Paulo Sebastian / Chris Bozinovski |  | <b>12 Ashley Street, CHATSWOOD NSW 2067</b> |  |
| <b>Prior Storage:</b> Esky <input checked="" type="checkbox"/> Fridge <input type="checkbox"/> Shelved <input type="checkbox"/>                                                        |  |                                                              |  | <b>Ph:</b> (02) 9910 6200                   |  |
|                                                                                                                                                                                        |  |                                                              |  | <b>Attn:</b> Jacinta Hurst                  |  |
| <b>Do samples contain 'potential' HBM?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (If YES, then handle, transport and store in accordance with FPM HAZID) |  |                                                              |  |                                             |  |

| Sample                                                                                                                                                                                                                                                                                                                 |              |                     |        | Analytes                                                                                                                                                                                     |     |             |                 |              |  |  |  | Notes                                                                                                                                                                                                                                                             |           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------|-----------------|--------------|--|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| DP ID                                                                                                                                                                                                                                                                                                                  | Date Sampled | Type S-soil W-water | Lab ID | TRH / BTEX                                                                                                                                                                                   | PAH | Metals (12) | OPP / OCP / PCB | Asbestos I.D |  |  |  |                                                                                                                                                                                                                                                                   |           |
| 109/10                                                                                                                                                                                                                                                                                                                 | 1/7/19       | S                   | 11     | ✓                                                                                                                                                                                            | /   | /           | /               |              |  |  |  |                                                                                                                                                                                                                                                                   | Combo 6   |
| 110/0.1                                                                                                                                                                                                                                                                                                                |              | ↓                   | 12     | ↓                                                                                                                                                                                            | ↓   | ↓           | ↓               |              |  |  |  |                                                                                                                                                                                                                                                                   | ↓         |
| 111/0-0.1                                                                                                                                                                                                                                                                                                              |              | ↓                   | 13     | ↓                                                                                                                                                                                            | ↓   | ↓           | ↓               | ✓            |  |  |  |                                                                                                                                                                                                                                                                   | Combo 6 A |
| 111/F                                                                                                                                                                                                                                                                                                                  |              | Material            | 14     | ↓                                                                                                                                                                                            | ↓   | ↓           | ↓               | ✓            |  |  |  |                                                                                                                                                                                                                                                                   | Combo 6   |
| 112/0.3                                                                                                                                                                                                                                                                                                                |              | S                   | BET    | ↓                                                                                                                                                                                            | ↓   | ↓           | ↓               |              |  |  |  |                                                                                                                                                                                                                                                                   | ↓         |
| 113/0.05                                                                                                                                                                                                                                                                                                               |              | ↓                   | 15     | ↓                                                                                                                                                                                            | ↓   | ↓           | ↓               |              |  |  |  |                                                                                                                                                                                                                                                                   | ↓         |
| 114/0.05                                                                                                                                                                                                                                                                                                               |              | ↓                   | 16     | ↓                                                                                                                                                                                            | ↓   | ↓           | ↓               |              |  |  |  |                                                                                                                                                                                                                                                                   | ↓         |
| 115/0.3                                                                                                                                                                                                                                                                                                                |              | ↓                   | 17     | ↓                                                                                                                                                                                            | ↓   | ↓           | ↓               |              |  |  |  |                                                                                                                                                                                                                                                                   | ↓         |
| 116/0.05                                                                                                                                                                                                                                                                                                               |              | ↓                   | 18     | ↓                                                                                                                                                                                            | ↓   | ↓           | ↓               |              |  |  |  |                                                                                                                                                                                                                                                                   | ↓         |
| D1                                                                                                                                                                                                                                                                                                                     |              | ↓                   | 19     | ↓                                                                                                                                                                                            | ↓   | ↓           | ↓               |              |  |  |  |                                                                                                                                                                                                                                                                   | ↓         |
| PQL (S) mg/kg                                                                                                                                                                                                                                                                                                          |              |                     |        |                                                                                                                                                                                              |     |             |                 |              |  |  |  |                                                                                                                                                                                                                                                                   |           |
| PQL (W) mg/L                                                                                                                                                                                                                                                                                                           |              |                     |        | ANZECC PQLs req'd for all water analytes <input type="checkbox"/>                                                                                                                            |     |             |                 |              |  |  |  |                                                                                                                                                                                                                                                                   |           |
| PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit                                                                                                                                                                                                                        |              |                     |        | <b>SAMPLES RECEIVED BY LAB</b><br>Please sign and date to acknowledge receipt of samples and return by email<br><br>Signature: <u>SPS</u><br>Date: <u>03/07/19</u><br>Lab Ref: <u>220893</u> |     |             |                 |              |  |  |  | Send results to:<br>Douglas Partners Pty Ltd<br>Email: <a href="mailto:paulo.sebastian@douglaspartners.com.au">paulo.sebastian@douglaspartners.com.au</a><br><a href="mailto:chris.bozinovski@douglaspartners.com.au">chris.bozinovski@douglaspartners.com.au</a> |           |
| *Metals to Analyse (Please circle) As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn, Fe, Al, Se                                                                                                                                                                                                                                      |              |                     |        |                                                                                                                                                                                              |     |             |                 |              |  |  |  |                                                                                                                                                                                                                                                                   |           |
| Total number of samples in container: <u>21</u><br>Date relinquished: <u>1/7/19</u> By: <u>SPS</u><br>Results required by.....<br><input type="checkbox"/> Same day <input type="checkbox"/> 24 hours <input type="checkbox"/> 48 hours <input type="checkbox"/> 72 hours <input checked="" type="checkbox"/> Standard |              |                     |        |                                                                                                                                                                                              |     |             |                 |              |  |  |  |                                                                                                                                                                                                                                                                   |           |

|                                                                                                                                                                                        |                                                              |                                                                                      |                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------|
| <b>Project No:</b> 91601                                                                                                                                                               | <b>Suburb/Town:</b> Muswellbrook                             | <b>To:</b> Envirolab Services Pty Ltd<br><b>12 Ashley Street, CHATSWOOD NSW 2067</b> |                            |
| <b>DP Order No:</b>                                                                                                                                                                    | <b>DP Contact Person:</b> Paulo Sebastian / Chris Bozinovski |                                                                                      |                            |
| <b>Prior Storage:</b> Esky <input checked="" type="checkbox"/> Fridge <input type="checkbox"/> Shelved <input type="checkbox"/>                                                        |                                                              | <b>Ph:</b> (02) 9910 6200                                                            | <b>Attn:</b> Jacinta Hurst |
| <b>Do samples contain 'potential' HBM?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (If YES, then handle, transport and store in accordance with FPM HAZID) |                                                              |                                                                                      |                            |

| Sample                                                                                                                                             |                                                                   |                           |        | Analytes   |     |             |                 |                                                                                                                                                                                 |  |  |  |         | Notes                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|---------------------------|--------|------------|-----|-------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|---------|------------------------------------------------------------------------------------------------------------------------------------------|
| DP ID                                                                                                                                              | Date Sampled                                                      | Type<br>S-soil<br>W-water | Lab ID | TRH / BTEX | PAH | Metals (12) | OPP / OCP / PCB | Asbestos I.D.                                                                                                                                                                   |  |  |  |         |                                                                                                                                          |
| D2                                                                                                                                                 | 1/7/19                                                            | S                         | BIT    | /          | /   | /           | /               |                                                                                                                                                                                 |  |  |  | Combo 6 |                                                                                                                                          |
|                                                                                                                                                    |                                                                   |                           |        |            |     |             |                 |                                                                                                                                                                                 |  |  |  |         |                                                                                                                                          |
|                                                                                                                                                    |                                                                   |                           |        |            |     |             |                 |                                                                                                                                                                                 |  |  |  |         |                                                                                                                                          |
|                                                                                                                                                    |                                                                   |                           |        |            |     |             |                 |                                                                                                                                                                                 |  |  |  |         |                                                                                                                                          |
|                                                                                                                                                    |                                                                   |                           |        |            |     |             |                 |                                                                                                                                                                                 |  |  |  |         |                                                                                                                                          |
|                                                                                                                                                    |                                                                   |                           |        |            |     |             |                 |                                                                                                                                                                                 |  |  |  |         |                                                                                                                                          |
|                                                                                                                                                    |                                                                   |                           |        |            |     |             |                 |                                                                                                                                                                                 |  |  |  |         |                                                                                                                                          |
|                                                                                                                                                    |                                                                   |                           |        |            |     |             |                 |                                                                                                                                                                                 |  |  |  |         |                                                                                                                                          |
|                                                                                                                                                    |                                                                   |                           |        |            |     |             |                 |                                                                                                                                                                                 |  |  |  |         |                                                                                                                                          |
| - PQL (S) mg/kg                                                                                                                                    |                                                                   |                           |        |            |     |             |                 |                                                                                                                                                                                 |  |  |  |         |                                                                                                                                          |
| PQL (W) mg/L                                                                                                                                       | ANZECC PQLs req'd for all water analytes <input type="checkbox"/> |                           |        |            |     |             |                 |                                                                                                                                                                                 |  |  |  |         |                                                                                                                                          |
| PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit                                                    |                                                                   |                           |        |            |     |             |                 |                                                                                                                                                                                 |  |  |  |         |                                                                                                                                          |
| *Metals to Analyse (Please circle) As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn, Fe, Al, Se                                                                  |                                                                   |                           |        |            |     |             |                 |                                                                                                                                                                                 |  |  |  |         |                                                                                                                                          |
| Total number of samples in container: 21                                                                                                           |                                                                   |                           |        |            |     |             |                 | <b>SAMPLES RECEIVED BY LAB</b><br>Please sign and date to acknowledge receipt of samples and return by email<br><br>Signature: [Signature]<br>Date: 03/07/19<br>Lab Ref: 220893 |  |  |  |         | Send results to:<br>Douglas Partners Pty Ltd<br>Email: paulo.sebastian@douglaspartners.com.au<br>chris.bozinovski@douglaspartners.com.au |
| Date relinquished: 1/7/19 By: JPS                                                                                                                  |                                                                   |                           |        |            |     |             |                 |                                                                                                                                                                                 |  |  |  |         |                                                                                                                                          |
| Results required by:                                                                                                                               |                                                                   |                           |        |            |     |             |                 |                                                                                                                                                                                 |  |  |  |         |                                                                                                                                          |
| <input type="checkbox"/> Same day <input type="checkbox"/> 24 hours <input type="checkbox"/> 48 hours <input type="checkbox"/> 72 hours X Standard |                                                                   |                           |        |            |     |             |                 |                                                                                                                                                                                 |  |  |  |         |                                                                                                                                          |



# CHAIN OF CUSTODY DESPATCH SHEET (2)

|                                                                                                                                                                                 |                                                              |                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------|
| Project No: <u>91601</u>                                                                                                                                                        | Suburb/Town: <u>Muswellbrook</u>                             | To: Envirolab Services Pty Ltd         |
| DP Order No: <u>147984</u>                                                                                                                                                      | DP Contact Person: <u>Paulo Sebastian / Chris Bozinowski</u> | 12 Ashley Street, CHATSWOOD NSW 2067   |
| Prior Storage: Esky <input checked="" type="checkbox"/> Fridge <input type="checkbox"/> Shelved <input type="checkbox"/>                                                        |                                                              | Ph: (02) 9910 6200 Attn: Jacinta Hurst |
| Do samples contain 'potential' HBM? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If YES, then handle, transport and store in accordance with FPM HAZID) |                                                              |                                        |

| Sample                                                                                                                                                                                                           |               |                           |          | Analytes                                                                                              |                    |          |  |                                                                                                     |  |  |  | Notes           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------------------|----------|-------------------------------------------------------------------------------------------------------|--------------------|----------|--|-----------------------------------------------------------------------------------------------------|--|--|--|-----------------|
| DP ID                                                                                                                                                                                                            | Date Sampled  | Type<br>S-soil<br>W-water | Lab ID   | TRH<br>BTX                                                                                            | PAH<br>(low level) | Lead     |  |                                                                                                     |  |  |  |                 |
| <u>201</u>                                                                                                                                                                                                       | <u>8/7/19</u> | <u>W</u>                  | <u>1</u> | <u>/</u>                                                                                              | <u>/</u>           | <u>/</u> |  |                                                                                                     |  |  |  | Combo <u>2L</u> |
| <u>202</u>                                                                                                                                                                                                       | <u>11</u>     | <u>W</u>                  | <u>2</u> | <u>/</u>                                                                                              | <u>/</u>           | <u>/</u> |  |                                                                                                     |  |  |  | //              |
| <u>D1</u>                                                                                                                                                                                                        | <u>11</u>     | <u>W</u>                  | <u>3</u> | <u>/</u>                                                                                              | <u>/</u>           | <u>/</u> |  |                                                                                                     |  |  |  | //              |
|                                                                                                                                                                                                                  |               |                           |          |                                                                                                       |                    |          |  |                                                                                                     |  |  |  |                 |
|                                                                                                                                                                                                                  |               |                           |          |                                                                                                       |                    |          |  |                                                                                                     |  |  |  |                 |
|                                                                                                                                                                                                                  |               |                           |          |                                                                                                       |                    |          |  |                                                                                                     |  |  |  |                 |
|                                                                                                                                                                                                                  |               |                           |          |                                                                                                       |                    |          |  |                                                                                                     |  |  |  |                 |
|                                                                                                                                                                                                                  |               |                           |          |                                                                                                       |                    |          |  |                                                                                                     |  |  |  |                 |
|                                                                                                                                                                                                                  |               |                           |          |                                                                                                       |                    |          |  |                                                                                                     |  |  |  |                 |
|                                                                                                                                                                                                                  |               |                           |          |                                                                                                       |                    |          |  |                                                                                                     |  |  |  |                 |
|                                                                                                                                                                                                                  |               |                           |          |                                                                                                       |                    |          |  |                                                                                                     |  |  |  |                 |
| PQL (S) mg/kg                                                                                                                                                                                                    |               |                           |          |                                                                                                       |                    |          |  |                                                                                                     |  |  |  |                 |
| PQL (W) mg/L ANZECC PQLs req'd for all water analytes <input type="checkbox"/>                                                                                                                                   |               |                           |          |                                                                                                       |                    |          |  |                                                                                                     |  |  |  |                 |
| PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit<br>*Metals to Analyse (Please circle) As, Cd, Cr, Cu, Pb, Zn, Hg, Ni, Mn, Fe, Al, Se, Sn, Sb, Mg, Co, B,         |               |                           |          | SAMPLES RECEIVED BY LAB<br>Please sign and date to acknowledge receipt of samples and return by email |                    |          |  | Send results to:<br>Douglas Partners Pty Ltd<br>Email: paulo.sebastian@douglaspartners.com.au       |  |  |  |                 |
| Total number of samples in container: <u>3</u><br>Date relinquished: <u>10/7/19</u> By: <u>JCL</u>                                                                                                               |               |                           |          | Signature: <u>[Signature]</u><br>Date: <u>11-7-19 1000</u>                                            |                    |          |  | <u>Chris. bozinowski @ douglaspartners.com.au</u><br><u>Jason. Lambert @ douglaspartners.com.au</u> |  |  |  |                 |
| Results required by.....<br><input type="checkbox"/> Same day <input type="checkbox"/> 24 hours <input type="checkbox"/> 48 hours <input type="checkbox"/> 72 hours <input checked="" type="checkbox"/> Standard |               |                           |          | Lab Ref: <u>221419</u>                                                                                |                    |          |  |                                                                                                     |  |  |  |                 |

## SAMPLE RECEIPT ADVICE

### Client Details

|                  |                                   |
|------------------|-----------------------------------|
| <b>Client</b>    | Douglas Partners Newcastle        |
| <b>Attention</b> | Chris Bozinovski, Paulo Sebastian |

### Sample Login Details

|                                             |            |
|---------------------------------------------|------------|
| <b>Your reference</b>                       | 91601      |
| <b>Envirolab Reference</b>                  | 220893     |
| <b>Date Sample Received</b>                 | 03/07/2019 |
| <b>Date Instructions Received</b>           | 03/07/2019 |
| <b>Date Results Expected to be Reported</b> | 10/07/2019 |

### Sample Condition

|                                                               |                     |
|---------------------------------------------------------------|---------------------|
| <b>Samples received in appropriate condition for analysis</b> | No                  |
| <b>No. of Samples Provided</b>                                | 18 Soil, 1 Material |
| <b>Turnaround Time Requested</b>                              | Standard            |
| <b>Temperature on Receipt (°C)</b>                            | 12.2                |
| <b>Cooling Method</b>                                         | Ice                 |
| <b>Sampling Date Provided</b>                                 | YES                 |

### Comments

Samples 112/0.3 and D2 received broken unable to salvage for analysis

Please contact the laboratory within 24 hours if you wish to cancel the aforementioned testing. Otherwise testing will proceed as per the COC and hence invoice accordingly.

Please direct any queries to:

#### Aileen Hie

**Phone:** 02 9910 6200  
**Fax:** 02 9910 6201  
**Email:** ahie@envirolab.com.au

#### Jacinta Hurst

**Phone:** 02 9910 6200  
**Fax:** 02 9910 6201  
**Email:** jhurst@envirolab.com.au

Analysis Underway, details on the following page:

| Sample ID | VTRH(C6-C10)/BTEXN in Soil | svTRH (C10-C40) in Soil | PAHs in Soil | Organochlorine Pesticides in soil | Organophosphorus Pesticides | PCBs in Soil | Acid Extractable metals in soil | Asbestos ID - soils | Asbestos ID - materials |
|-----------|----------------------------|-------------------------|--------------|-----------------------------------|-----------------------------|--------------|---------------------------------|---------------------|-------------------------|
| 101-0.2   | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               |                     |                         |
| 102-0.05  | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               |                     |                         |
| 103-0.05  | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               |                     |                         |
| 104-1.0   | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               |                     |                         |
| 105-0.1   | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               |                     |                         |
| 106-0.26  | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               |                     |                         |
| 106-0.5   | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               |                     |                         |
| 107-0.1   | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               |                     |                         |
| 107-0.22  | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               |                     |                         |
| 108-0.3   | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               |                     |                         |
| 109-1.0   | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               |                     |                         |
| 110-0.1   | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               |                     |                         |
| 111-0-0.1 | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               | ✓                   |                         |
| 111/F     |                            |                         |              |                                   |                             |              |                                 |                     | ✓                       |
| 113-0.05  | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               |                     |                         |
| 114-0.05  | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               |                     |                         |
| 115-0.3   | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               |                     |                         |
| 116-0.05  | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               |                     |                         |
| D1        | ✓                          | ✓                       | ✓            | ✓                                 | ✓                           | ✓            | ✓                               |                     |                         |

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

### Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.



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## **Appendix D**

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Drawing 1 – Test Location Plan





0 10 20 30 40 m



Site Location

### Legend

- Groundwater Location
- Test Pit Location
- Approximate Site Boundary
- Previous Borehole Locations (JKEnvironments)

Drawing adapted from Nearmap Image dated 13.1.2019.  
Test locations are approximate only and were located using hand-held GPS.

